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ADOBE CREEK WATERSHED MITIGATION AND MONITORING PLAN
(REVISED)

Prepared by

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Prepared for

Santa Clara Valley Water District
5750 Almaden Expressway
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1.0 PROJECT DESCRIPTION

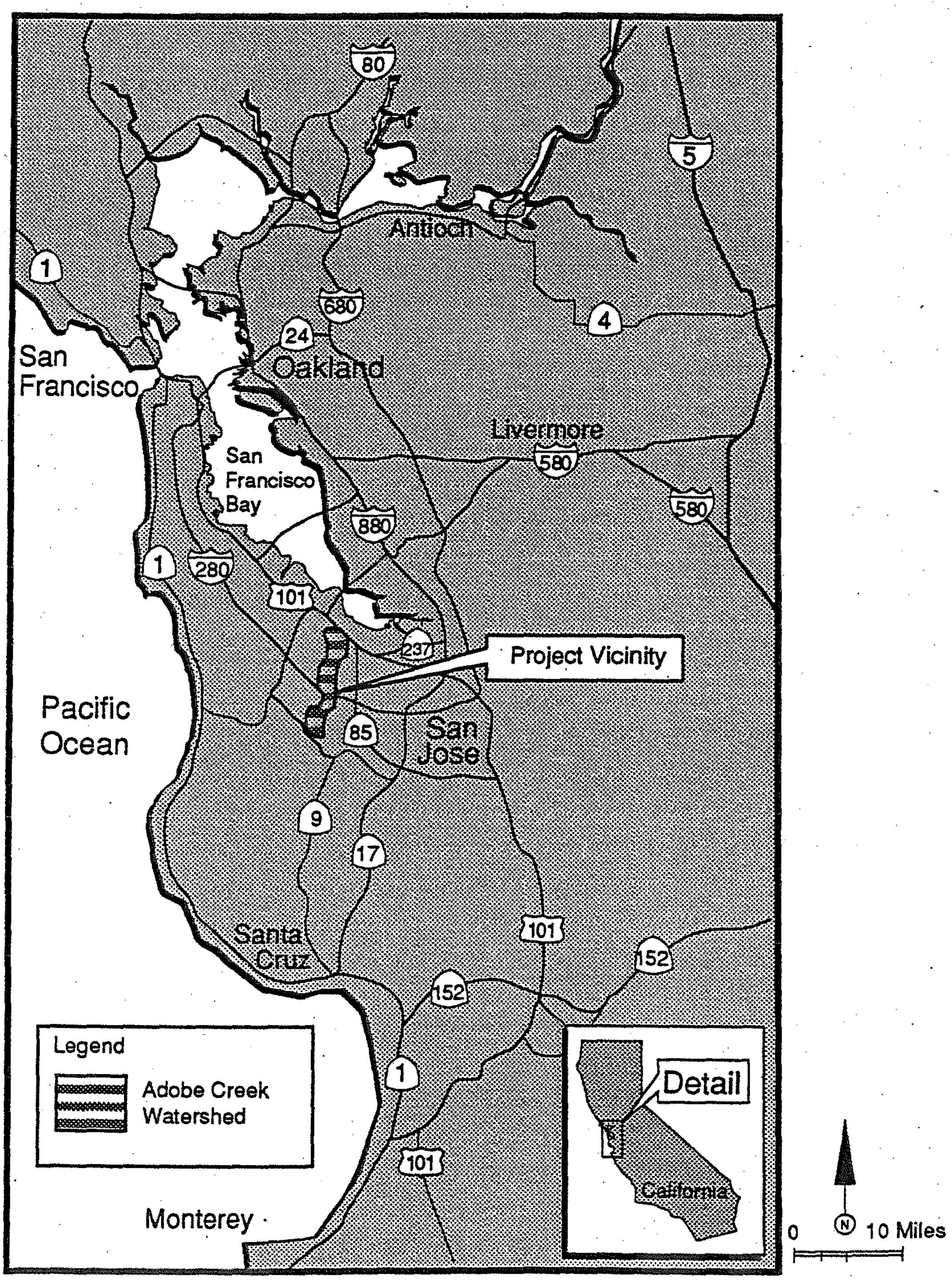
1.1 PROJECT SUMMARY

Adobe Creek is an approximately 14.7 mile long creek located in Santa Clara County, California. Adobe Creek drains a watershed area of approximately 10.84 square miles and transmits water from the northeastern slopes of the Santa Cruz mountains to South San Francisco Bay through the Charleston Slough (Sheet 1). The majority of this watershed area (75%) is mountainous and 25% of the watershed occurs on the urbanized Santa Clara Valley floor. The lower portion of Adobe Creek (downstream of El Camino Real) was channelized in the 1950's to protect development in it's historic floodplain, however, the upper portion of the creek (upstream of El Camino Real) has not been channelized. Significant flooding occurred adjacent to Adobe Creek in 1952, 1955, 1983, 1986, and 1995. The Santa Clara Valley Water District (District) estimates for the existing channel configuration that approximately 220 existing structures will be flooded during a one percent flood flow (100-year event).

Therefore, the District, through the Adobe Creek Watershed Planning Study, has developed a flood control plan for the upper portion of Adobe Creek from El Camino Real to upstream of Moody Road, in Santa Clara County, California (Sheet 1) (District 1996). The objectives of the project are to reduce flooding, erosion, and sedimentation problems, adopt a future maintenance program, provide adequate access for future maintenance activities, and reduce future maintenance costs. The minimization of environmental impacts served as a basic design guideline in developing a project to meet the project objectives. The proposed project consists of limited channel modifications, creekbank erosions repairs, development of new creek maintenance access, enhancement of existing access, and adoption of a new maintenance program. Channel modifications include enlargement of the Adobe Creek channel at two locations and replacement of six culverts. Sheet 2 shows the location of all project sites within the project area.

A Draft Environmental Impact Report (DEIR) was prepared and quantified impacts to riparian habitat, United State Army Corps of Engineers (USACE) jurisdictional areas, and California Department of Fish and Game (CDFG) jurisdictional areas from the proposed project (District 1996). Mitigation measures to compensate for these impacts were also identified in the DEIR.

This mitigation and monitoring plan describes the impacts to riparian habitat and USACE jurisdictional areas and provides a detailed plan for the installation and monitoring of mitigation measures to reduce those impacts to a less than significant level.



PURPOSE: Reduce flooding erosion and sedimentation

DATUM: NGVD 1929

ADJACENT PROPERTY:
OWNERS: See attached listing

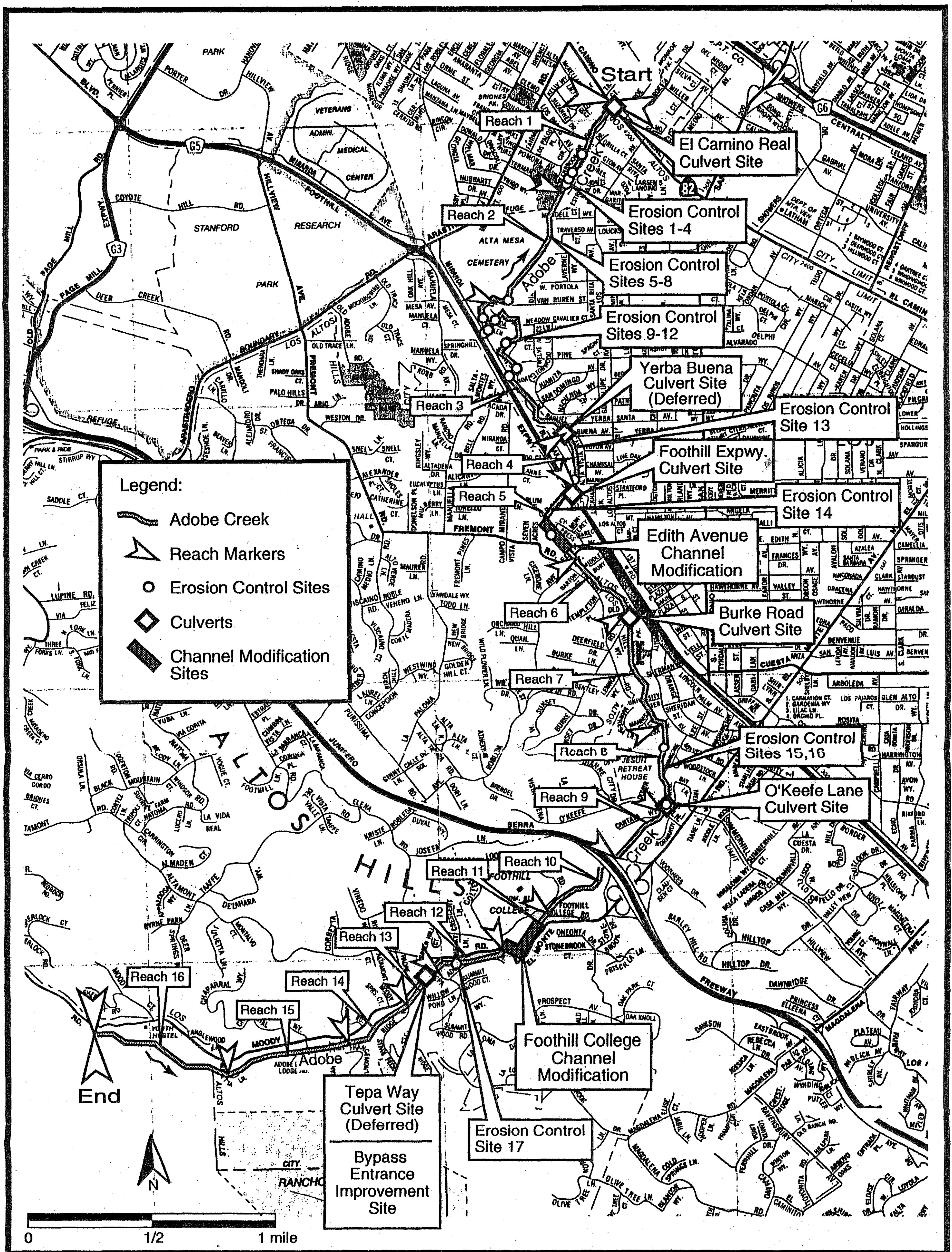
ADOBE CREEK WATERSHED MITIGATION AND MONITORING PLAN

Regional Vicinity Map

SCALE:
APPLICATION BY:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

FLOOD AND EROSION CONTROL

IN:
AT:
COUNTY OF: Santa Clara: CA
STATE: California
APPLICATION BY: SCVWD
SHEET: 1 of 15 JANUARY 13, 1998


Start
Reach 1
El Camino Real Culvert Site
Erosion Control Sites 1-4
Reach 2
Erosion Control Sites 5-8
Erosion Control Sites 9-12
Yerba Buena Culvert Site (Deferred)
Reach 3
Erosion Control Site 13
Foothill Expwy. Culvert Site
Reach 4
Reach 5
Erosion Control Site 14
Edith Avenue Channel Modification
Reach 6
Burke Road Culvert Site
Reach 7
Reach 8
Erosion Control Sites 15,16
Reach 9
O'Keefe Lane Culvert Site
Reach 10
Reach 11
Reach 12
Reach 13
Reach 14
Reach 15
Reach 16
End
Foothill College Channel Modification
Tepa Way Culvert Site (Deferred)
Bypass Entrance Improvement Site
Erosion Control Site 17
Adobe Creek
Legend:
Adobe Creek
Reach Markers
Erosion Control Sites
Culverts
Channel Modification Sites
STANFORD
RESEARCH
PARK
LOS ALTOS HILLS
N
0
1/2
1 mile

PURPOSE: Reduce flloding erosion and sedimentation

DATUM: NGVD 1929

ADJACENT PROPERTY:
OWNERS: See attached listing

ADOBE CREEK WATERSHED
MITIGATION AND MONITORING PLAN

Project Site Map

SCALE:
APPLICATION BY:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

FLOOD AND EROSION CONTROL

IN:
AT:
COUNTY OF: Santa Clara: CA
STATE: California

APPLICATION BY: SCVWD
Sheet 2 of 15 DATE: JANUARY 13, 1998

1.2 RESPONSIBLE PARTIES

The District is the applicant and the lead agency for the Adobe Creek Watershed project. Scott Wilson and Vickie Germany are the contact persons for the District and have the following address and phone number:

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1.3 PROJECT IMPACTS

1.3.1 Methods

The objective of this impact assessment was to quantify the acreage of impact to habitat within the riparian corridor, and to USACE and CDFG jurisdictional areas. These impacts will result from construction of the proposed flood control improvements. As described below, the majority of the impacts were measured in the field and some were quantified using aerial photographs. Mapping of most impact sites onto aerial photographs was not possible due to the obscuring of the impact area by tree canopy, the very small size of some impact areas (eg. erosion control sites), and the difficulty in identifying the boundary between the canopy of impact and non-impact areas on aerial photographs.

1.3.1.1 USACE Jurisdictional Areas/Wetland Habitats. H.T. Harvey & Associates surveyed the entire project area in 1993 to identify and delineate the boundary of USACE jurisdictional waters (including tributary waters and wetlands) (H.T. Harvey & Associates 1993). The results of this investigation were verified by the USACE in 1995 (Appendix I). The acreage of impact to USACE jurisdictional waters at the various impact sites was determined by field measurement and/or by overlaying the construction plans for Adobe Creek (SCVWD 1996) onto the verified map of jurisdictional waters. At impact sites where the use of aerial photographs provided sufficient accuracy, the impact acreage was measured with a Planix digital planimeter. The location and surface area of existing hardscape (rip-rap, concrete, gunnite) on the channel bed within the impact areas was determined during field surveys.

1.3.1.2 CDFG Jurisdictional Area/Riparian Corridor Habitat. Each site along Adobe Creek that will be physically altered according to the Districts flood control plan (channel modification, culvert installation, bank erosion repair) was examined in the field to determine the surface area and quality of habitat within the riparian corridor that will be removed. The limit of the riparian corridor was defined according to CDFG standards as the hinge point at the top of the creek channel bank or the dripline of the riparian tree canopy where this canopy extended beyond the top of bank.

Due to the complex mosaic of habitats within the riparian corridor, impacts were assessed based on three habitat quality categories. This methodology ensures that, regardless of the type of habitat impacted, its relative value is taken into account in quantifying impacts. As a result, the impact quantities are not provided by habitat type, but rather by habitat quality category.

The habitat quality categories were based on observed vegetation characteristics that correspond to fish and wildlife habitat values such as the presence/absence and the density of the overstory vegetation, the presence or absence of native species, and the complexity of vegetation structure (e.g. presence of tree, shrub and herbaceous layers). The three habitat quality categories are:

> High quality: Native overstory with continuous understory or occurring in dense thickets; dense native overstory with sparse, non-native or no understory; and native willow thicket.
>
> Medium quality: Sparse native overstory with sparse, non-native or no understory, non-native overstory with native understory, and dense non-native overstory with sparse, non-native or no understory.
>
> Lower quality: Sparse non-native overstory with sparse, non-native or no understory. In addition, any areas *not* included in medium or high quality categories that will be covered with riprap, gabions, etc. (eg. ruderal habitat and bare ground)

1.3.2 Impacts to USACE Jurisdictional Areas/Wetland Habitats

The proposed project will impact a total of approximately ~~1.12~~ 1.18 acres of tributary waters (Table 1). The majority of this impact will occur from channel modification at the West Edith Avenue and Foothill College sites and from culvert replacement and channel resurfacing at the El Camino Real site. Approximately half of the impact to tributary waters ~~(0.55~~ 0.58 acres) involves the resurfacing of artificially lined channel bed surfaces composed of concrete, gunite, and rock and replacement of cement culverts (Table 1). The remainder of the impact to tributary waters (~~0.57~~ 0.06 acres) will involve the installation of rock riprap on the natural channel bed. The majority of this conversion of natural channel bed to rock riprap will occur at the channel modification sites (West Edith Avenue and Foothill college). Channel modification at the Foothill College and West Edith Avenue sites will widen the channel bed and result in a net increase in the area of USACE jurisdiction (tributary waters) within the project area. Due to the incised nature of the channel and lack of substantial ponding within the channel, seasonal wetlands are absent from the majority of the project area. Watercress (*Rorippa nasturtium-aquaticum*), however, occurs in small, monotypic patches within tributary waters; these patches are found primarily at the Foothill College Channel Modification Site. . The watercress grows within small pools on artificial surfaces (gunite and riprap) that occur above and below the drops structures at the Foothill College Channel Modification Site. The size and location of the watercress patches varies from year to year as it is frequently washed out during winter floods. It then recolonizes the channel bed during the spring and summer. Approximately 0.09 acres of watercress dominated jurisdictional wetlands will be impacted. This wetland impact is considered temporary since watercress is expected to recolonize the resurfaced channel bed.

Table 1. Acreage of Impacts to USACE Jurisdictional Areas.

Type/Location of Impact	Impact to Tributary Waters (Acres)		Total Impact Area (Acres)
	Natural (Earthen) Channel Bed	**Artificial (Hardscape) Channel Bed**	
West Edith Avenue Channel Modification	~~0.13~~ 0.16	~~0.10~~ 0.13	~~0.23~~ 0.29
Foothill College Channel Modification	0.18	0.17	0.35
Culvert Replacement Sites (6 sites)	0.06	0.28	0.34
Erosion Repair Sites (17 sites)	0.2	0	0.20
Total	~~0.57~~ **0.6**	~~0.55~~ **0.58**	~~1.12~~ **1.18**

1.3.3 CDFG Jurisdictional Area/Riparian Corridor Habitat

Implementation of the proposed project will result in the loss of a total of ~~1.40~~ 1.54 acres of habitat in the riparian corridor and within CDFG jurisdiction (Table 2). Approximately 20 % of the impact area comprises high quality habitat, 30 % medium quality habitat, and 50 % low quality habitat. The majority (~62 %) of the impact to habitat within the riparian corridor will occur from channel modifications at West Edith Avenue and Foothill College. The majority of impacts to high quality riparian habitat will occur at Foothill College. Impacts at the erosion repair sites involve the installation of gabions, riprap, sacked concrete slope protection, and geocell along the creek banks. The placement of these materials will result in a covering of native substrate (e.g. soil) thus inhibiting the establishment of native vegetation, but involve minimal vegetation removal.

Table 2. Impacts to Riparian Corridor Habitat.

Location of Impact	**Impact to Riparian Corridor Habitat (Acre)**			**Total Impact Area (Acres)**
	Low Quality	**Medium Quality**	**High Quality**	
West Edith Avenue	~~0.37~~ 0.45	~~0.09~~0.093	~~0.003~~ 0.058	~~0.46~~ 0.60
Foothill College	0.07	0.10	0.23	0.40
Culvert Replacement Sites	0.07	0.22	0.003	0.29
Erosion Repair Sites	0.19	0.06	0	0.25
Total	**~~0.69~~ 0.78**	**0.47**	**~~0.24~~ 0.29**	**~~1.40~~ 1.54**

1.4 TYPES, FUNCTIONS, AND VALUES OF IMPACT AREAS

1.4.1 USACE Jurisdictional Areas

1.4.1.1 Water Quality/Hydrology. Adobe Creek flows from its headwaters along Monte Bello Ridge in the Santa Cruz Mountains to San Francisco Bay through Charleston Slough. Presently, the creek carries intermittent seasonal flows of water during the winter and spring rainy season, but is primarily dry during the summer and fall. An exception is the Foothill College channel modification site, which supports flow throughout the year due to upstream seeps. Probably due to effects of urbanization, the low flow rate and the duration of seasonal low-flow have decreased compared to historic records (Scott Wilson 1997 pers. com.)

Prior to the turn of the century, the creek had a well-defined channel that meandered down a gently sloping alluvial fan flattening out and losing definition as it approached San Francisco Bay. Numerous changes have been made to the creek channel alignment during the course of development of lands adjacent to the creek. These changes often involved reducing the creek meander to allow development within its floodplain (District 1996). Partially as a consequence of that alteration of the stream dynamics, there are several locations within the project area where the creek bank or channel is considered unstable. The District has identified a total of 72 erosion sites, 20 are classified as "major", 28 as "minor", and 24 as "noted only" (District 1996). The unstable, erosive nature of the creek bed and banks within the project area introduces large quantities of sediment into the creek system during high flows and negatively impacts the aquatic environment and water quality both in the creek and the San Francisco Bay.

Surface runoff channeled into the creek also carries organic and inorganic contaminants to the San Francisco Bay that degrade the Bay's water quality, accumulate in Bay sediments, and pose a threat to downstream biotic communities. These contaminants include hydrocarbon derivatives and heavy metals washed from road surfaces as well as detergents, paints, motor oil and other discarded material carried through the storm drain system. The Adobe Creek watershed contributes an estimated 10 percent of the metals and organic contaminants discharged to the Bay from Santa Clara County (District 1996).

The purpose of the project is to correct existing flooding, erosion, and sedimentation problems along Adobe Creek. The project proposes to repair 17 channel bank erosion sites and eight channel bottom erosion sites, as well as the eroding channel at West Edith Avenue and on the Foothill College property. These erosion repairs will reduce the amount of sediment introduced into the creek system over time and therefore, reduce the turbidity of creek water and the rate of sediment discharge to San Francisco Bay (District 1996). Since, contaminants such as hydrocarbon derivatives, polychlorinated biphenyls (PCBs), chlorinated pesticides, and heavy metals tend to adhere to sediments, this reduction in the sediment discharge rate should reduce the discharge of such contaminants to downstream ecosystems.

The proposed modifications along the Adobe Creek channel will expose bare soils and could result in increased erosion, turbidity, and sedimentation during construction. These impacts will be temporary in nature and will be reduced by the implementation of standard construction practices to minimize erosion. The following best management practices identified in the Engineer's Report (District 1996) will limit most potential impacts to water quality due to erosion and sedimentation during project construction:

1) Project construction will occur only during the dry months (April 15 to October 15).

2) Implementation of temporary erosion control measures and a stormwater pollution prevention plan (SWPPP).

3) Upon completion of construction and before the rainy season, the District will stabilize and/or revegetate all exposed soils.

1.4.1.2 Plant Communities. Riverine habitat is present throughout the project site and often occurs beneath the canopies of riparian forest and landscaped/non-native habitats. Riverine habitat comprises primarily non-vegetated channel bottoms and banks; however, seasonal, or emergent, wetland vegetation is present in the creek channel bed at three project sites (Foothill College, Foothill Expressway and Tepa Way). The channel bed substrate comprises native soils, gravels or artificial surfaces such as concrete and gunite. Seasonal wetland vegetation consists almost exclusively of monotypic stands of watercress growing in flowing water within the low flow channel on artificial concrete and rip-rap substrates. The amounts and locations of seasonal wetland vegetation within channels changes from year to year depending on conditions within the bed of the stream. Very small patches of emergent vegetation, consisting primarily of tall umbrella sedge (*Cyperus eragrostis*), rabbitfoot grass (*Polypogon monspelliensis*), and arroyo willow seedlings (*Salix lasiolepis*) are present at the Foothill College channel modification site.

1.4.1.3 Wildlife and Fisheries. Table 3 provides a list of special status species that could potentially occur at the project sites along Adobe Creek. Although some of these species may not be present at these sites, conditions along Adobe Creek were deemed potentially suitable for these species.

The areas of perennial ponding at the Foothill College channel modification site provide breeding habitat for Pacific treefrogs and western toads. The California red-legged frog is probably present upstream from this site in isolated tributaries, ponds, or springs and there are known records from this part of Santa Clara County. An occasional frog may be washed into the Foothill College channel modification site during winter or spring storm events. However, such storm-washed frogs are not expected to reproduce in the project reach because of inadequate breeding habitat for this species. Specifically, the lack of deep pools and the abundance of predators such as raccoon, skunks and opossums. Both foothill yellow-legged frogs and western pond turtles could potentially be present in tributaries or ponds in the Adobe Creek watershed upstream from Foothill College. However, a lack of recent reports of these declining species from the vicinity of the project area, as well as the low habitat quality at the project sites, makes it unlikely that these species will be impacted by the project.

Ponded water at the Foothill College channel modification site also provides breeding habitat for common insect species which in turn attract insectivorous bird species such as the Anna's Hummingbird (*Calypte anna*), Pacific-slope Flycatcher (*Empidonax difficilis*) and Black Phoebe (*Sayornis nigricans*). These bird species may breed at the Foothill College and West Edith Avenue channel modification sites. Certain migratory bird species such as Yellow Warbler (*Dendroica petechia*), Wilson's Warbler (*Wilsonia pusilla),* and Western Tanager (*Piranga ludoviciana)* may also feed on aquatic insects at the Foothill College channel modification site. Project implementation will not significantly impact these insectivorous resident and migratory bird species because the project sites represent a small fraction of the breeding and foraging habitat available regionally. Moreover, project construction should not change the surface area or hydroperiod of ponded water habitat at the Foothill College channel modification site (see Section 2.2.1).

Fish are absent from the majority of the project area during the dry season due to the lack of water. The Foothill College site is the only reach within the project impact area that exhibits perennial low flows. The only fish species observed in the project area were threespine sticklebacks (*Gasterosteus aculeatus*), observed at the Foothill College channel modification site, and California roach (*Hesperoleucus symmetricus*) and Sacramento sucker (*Catostomus occidentalis*) observed downstream of O'Keefe Lane (HRG 1989). Resident rainbow trout (*Oncorhynchus mykiss*) are probably present in some isolated tributaries upstream of the Foothill College channel modification site and an occasional fish may be washed into this area during storm events. The habitat at the Foothill College channel modification site is marginal for trout because of the lack of both deep pools and cool water temperatures during the summer and early fall. Steelhead (*Oncorhynchus mykiss*) have not recorded at Adobe Creek.

Table 3. Special Status Species That Could Occur at Adobe Creek.

Common Name ***Scientific Name***	**Status**	**Habitat**	**Potential for Occurrence**
Animals			
State or Federally Endangered or Threatened; or Proposed for State or Federal Status			
Steelhead Trout *Oncorhynchus mykiss*	FT	Found only in rivers, creeks, and streams that reach the ocean; requires presence of shallow, partly shaded pools, riffles, and runs with water temperatures <70°F for juveniles and adults and <58°F for developing embryos.	It is likely that suitable habitat on the sites exist although downstream barriers may limit upstream migration. Not observed nor have recent occurrences been reported. Historically inhabited area prior to urbanization.
California Red-legged Frog *Rana aurora draytonii*	FT, CSC	Inhabits quiet pools of streams, marshes and ponds, often with overhanging vegetation.	No suitable habitat for most of Adobe Creek through the project area due to the intermittent nature of the creek and lack of deep pools. Probably occurs in upper watershed. Rarely a frog may be washed into the Foothill College site.
State Protected, and/or California Species of Special Concern			
Chinook Salmon *Oncorhynchus tshawytscha*	CSC	Found only in rivers, creeks, and streams that reach the ocean; they require presence of shallow, partly shaded pools, riffles, and runs with water temperatures <70°F for juveniles and adults and <58°F for developing embryos.	No suitable habitat on any of the sites due to downstream barriers and the lack of water for several months of the year.
Foothill Yellow-legged Frog *Rana boylii*	CSC	Inhabits rocky streams in a variety of wooded habitats.	Historically inhabited area prior to urbanization. Now is absent from urban creeks such as Adobe.
Western Pond Turtle *Clemmys marmorata*	CSC	Associated with permanent or intermittent streams and ponds in a wide variety of habitats.	Possible visitor, but, breeding unlikely. Sites lack water for several months of the year.
Sharp-shinned Hawk *Accipiter striatus*	CSC	Very local breeder, primarily at higher elevations; common migrant and winter visitor throughout the region in all habitats.	This species could forage along any of the study drainages. Nesting may occur in the upper reaches of the Adobe Creek watershed but is unlikely in the project area.
Cooper's Hawk *Accipiter cooperii*	CSC	Breeds in most of the wooded habitats found in the state; uses many habitats in winter.	This species could forage along any of the study areas during the winter and migration. May breed in the project area.
California Yellow Warbler *Dendroica petechia brewsteri*	CSC	Breeds in riparian woodlands from coastal and desert low-lands up to 8000 ft in the Sierra Nevada.	A common transient in riparian habitats during migration; potential breeding habitat is present at those study sites where willows are present, although breeding habitat quality is low at all project sites.
Townsend's Big-eared Bat *Plecotus townsendii*	CSC	Found in all habitats except alpine and sub-alpine; most abundant in mesic habitats.	This species is a possible resident that could forage above any of the sites. None of the sites offer more than marginal roosting habitat.
California Mastiff Bat *Eumops perotis californicus*	CSC	Occurs in arid to semi-arid terrain; requires steep cliffs, rock outcroppings, or buildings for roosting.	Occurs rarely in Santa Clara County. Prefers habitat that is drier than any of the study sites, so presence is unlikely.
Pallid Bat *Antrozous pallidus*	CSC	Occurs in a variety of habitats, including grasslands, shrublands, woodlands, and forests; most common in dry open habitats with rocky areas for roosting.	This species is a likely resident that could forage above any of the sites. None of the sites offer more than marginal roosting habitat.
Ringtail *Bassariscus astutus*	SP	Occurs in riparian habitats and other wooded areas.	Suitable habitat is present along the upper reaches of Adobe Creek.

Status Codes:
FE = Federally Endangered
FT = Federally Threatened
FPE = Federally Proposed Endangered
SP = Fully protected species in the state of California
CE = California Endangered
CT = California Threatened
CSC = California Species of Special Concern

1.4.2 CDFG Jurisdictional Area/Riparian Corridor Habitat

1.4.2.1 Plant Community. A narrow strip of mixed riparian vegetation occurs on the banks along most of the creek. Generally, riparian habitat extends to the top of the bank, or slightly beyond. The majority of trees are located on the upper banks. Extremely steep, unvegetated banks shaded by the canopy of adjacent trees are also common along the channel. Where bank topography is less steep, lower banks support occasional trees and shrubs.

Many native trees are present along the creek; however, non-native species are frequently intermixed, or sometimes clustered in relatively large stands. The predominant native tree species of the project area are coast live oak (*Quercus agrifolia*) and California bay (*Umbellularia californica*), with occasional valley oak (*Quercus lobata*), Mexican elderberry (*Sambucus mexicana*), and California buckeye (*Aesculus californica*). Willows (*Salix* sp.) occupy the lower channel banks in some areas such as the Foothill College site. Non-native trees occur frequently in all areas, and include blue gum (*Eucalyptus globulus*), Chinese tree-of-heaven (*Ailanthus altissima*), black locust (*Robinia pseudo-acacia*) and elm (*Ulmus* sp.).

The shrub understory, consisting of native and non-native species, is sparse in many areas due to shading by trees and human disturbance. Typical understory species include poison oak (*Toxicodendron diversilobum*), Himalayan blackberry (*Rubus discolor*), periwinkle (*Vinca* sp.) and English ivy (*Hedera helix*). Unvegetated banks within the mixed riparian forest consist of bare soils or artificial surfaces such as concrete, gabion and gunite.

1.4.2.2 Wildlife. Table 3 provides a list of special status species that could potentially occur at the project sites along Adobe Creek. The structural and floristic diversity of much of the disturbed riparian habitat adjacent to residential areas within the project area offers a combination of foraging and nesting habitat and cover that is of value to wildlife. The riparian habitat within the project area may function as a movement corridor for dispersal of some animal species (especially juveniles) particularly where the adjacent natural habitat has been lost. Numerous species of animals use riparian habitats in Santa Clara County (CDFG WHR Database 1996). While the riparian habitat of Adobe Creek is degraded, exhibiting extensive bank modifications (e.g., gunite) and replacement of native tree species by horticultural plantings, the creek still likely provides some habitat value for many of these species.

Breeding species such as the Chestnut-backed Chickadee (*Poecile rufescens*), Bushtit (*Psaltriparus minimus*), Downy Woodpecker (*Picoides pubescens*), and Bullock's Oriole (*Icterus bullocki*) forage and nest in the tree canopy or sub-canopy of creekside habitats within the project area, while Bewick's Wren (*Thryomanes bewickii*), Spotted Towhee (*Pipilo maculatus*), Dark-eyed Junco (*Junco hyemalis*) and Wrentit (*Chamaea fasciata*) nest in dense understory vegetation and ground cover found at both the Foothill College and West Edith Avenue channel modification sites. Project impact sites where oaks are dominant, such as the Foothill College site and the downstream portion of the West Edith Avenue site, may support the Oak Titmouse (*Baeolophus inornatus*), White-breasted Nuthatch (*Sitta carolinensis*), and Nuttall's Woodpecker (*Picoides nuttallii*).Brown Creepers (*Certhia americana*) and Steller's Jays (*Cyanocitta stelleri*) nest in stands of mature redwoods such as those to be saved on the east side of the creek at the West Edith Avenue site. The mature eucalyptus trees at the West Edith Avenue site may support the nests of several raptor species, such as Red-tailed (*Buteo jamaicensis*), Red-shouldered (*Buteo lineatus*), and Cooper's Hawks (*Accipiter cooperi*).

Riparian areas in the South Bay are known to concentrate and support relatively high numbers of migrant birds that use riparian habitats as migratory stopovers and foraging sites and overwintering birds that use riparian vegetation for foraging and for cover (Meyer 1988). Despite the disturbed nature of the riparian plant community and the low abundance of willow and cottonwood dominated habitat within the project area, the diversity and abundance of migratory birds using the streamside vegetation within the project area are likely higher than in adjacent nonriparian areas.

Small mammals expected to occur along this creek channel include the deer mouse (*Peromyscus maniculatus*) and Botta's pocket gopher (*Thomomys bottae*). California ground squirrels (*Spermophilus beecheyi*), as well as non-native fox squirrels (Sciurus niger) and eastern gray squirrels (*S. carolinensis*) were observed. Predators such as the striped skunk (*Mephitis mephitis*) and raccoon (*Procyon lotor*) are attracted to these habitats by an abundance of prey. The big brown bat (*Eptesicus fuscus*) and little brown myotis (*Myotis lucifugus*) are predicted to forage for insects over the creek. Ringtails (*Bassariscus astutus*) may be present in the upper reaches of the Adobe Creek watershed. The distribution of this secretive nocturnal animal in the South Bay is poorly understood, and it is not known whether Ringtails occur within the project area.

Reptiles which are expected to occur in this habitat include western fence lizards (*Sceloporus occidentalis*), southern alligator lizards (*Elgaria multicarinata*), northern alligator lizards (*Elgaria coerula*), and gopher snakes (*Pituophis melanoleucus*).

1.4.2.3 Water Quality/Hydrology. The water quality and hydrology of the riparian areas is covered in the USACE Jurisdictional Area/Wetlands Habitat section above.

2.0 GOAL OF MITIGATION

2.1 INTRODUCTION

The goal of this mitigation plan is to fully compensate for biotic impacts to riparian habitat and to USACE and CDFG jurisdictional areas resulting from the proposed project. Project construction within tributary waters is designed in such a way that impacts to tributary waters and to seasonal wetlands within tributary waters will be self-mitigating as described below (Section 2.2.1).

The riparian mitigation program was designed to restore a self-sustaining, multi-layered, native riparian forest both as an integral part of the channel modification sites and within disturbed creekside gaps in the project area. Riparian habitat restoration within disturbed creekside gaps will improve the continuity of native woody species along the riparian corridor. Riparian habitat restoration will be accomplished via active revegetation of woody species native to the Adobe Creek watershed, eradication and control of invasive exotics within the mitigation areas, and creation of a more stable channel cross-section at the channel modification sites. The choice of plant species to be installed at each restoration site was guided by the dominant native species to be impacted, the physical conditions of each site, and the composition of nearby native riparian plant communities. Since the majority of riparian habitat to be impacted is of low to medium quality, with a predominance of non-native species and ruderal habitat (Table 2), the restoration of a multi-layered canopy, dominated by native woody species will result in an improvement of riparian habitat value to wildlife within the project area.

2.2 Mitigation Ratios and Mitigation Acreage

2.2.1 USACE-Jurisdictional Area

Project impacts to tributary waters within the Adobe Creek channel bed will be self-mitigating. Due to channel bed widening at the Foothill College and West Edith Avenue channel modification sites, project construction will result in a net increase of approximately 0.23 acres in the surface area of tributary waters among these two locations. The average width of the channel bed will increase by approximately 3 feet at the West Edith Avenue site and by approximately 7 feet at the Foothill College site. Construction at the culvert replacement and erosion control sites will not decrease the acreage of tributary waters at those sites.

Impacts to wetlands dominated by watercress, located primarily at the Foothill College site will also be self-mitigating. As summarized in section 1.3.2, the watercress is often scoured out during winter rains and rapidly recolonizes pools underlain with artificial surfaces (riprap and gunite) above and below drop structures. Project construction will resurface these pools with riprap and will reconstruct the drop structures at similar locations. This work will not decrease the surface area and should not substantially alter the hydroperiod within the pools. Therefore, watercress is expected to recolonize these impact areas.

2.2.2 CDFG Jurisdictional Area/Riparian Habitat

Mitigation acreage for riparian habitat was calculated by applying a ratio of 1:1 for low quality habitat, 2:1 for medium quality habitat, and 3:1 for high quality habitat (Table 4). Low, medium, and high quality habitat were defined in Section 1.3.1.2. These mitigation ratios and method of calculating the total mitigation acreage for riparian habitat are acceptable to CDFG (Appendix I)

Table 4. Relation of Impact to Mitigation Acreage for Riparian Habitat.

Riparian Habitat Quality	Impact Acreage	Mitigation Ratio (Mitigation Area: Impact Area)	Mitigation Acreage Required
Low	~~0.69~~ 0.78	1:1	~~0.69~~ 0.78
Medium	0.47	2:1	0.94
High	~~0.24~~ 0.29	3:1	~~0.72~~ 0.87
Totals	**~~1.4~~ 1.54**		**~~2.35~~ 2.59**

2.3 TYPES, FUNCTIONS, AND VALUES OF HABITAT TO BE CREATED

2.3.1 USACE Jurisdictional Area

Since the project is designed to increase the stability of the creek bed and banks, project construction will reduce the turbidity of floodwaters within and downstream of the project area. The increase in the cross-sectional area of the creek channel at the channel modification and culvert replacement sites and the remediation of failing banks at the erosion control sites will decrease erosion and scour during flood events. This will improve the creek's water quality since most anthropogenic contaminants (eg. heavy metals, hydrocarbons, ammonium, phosphate) have a high affinity for sediment particles and since high trubidity is frequently correlated with high biological oxygen demand. This expected improvement of water quality will improve riverine habitat for fish, amphibians, and aquatic invertebrates downstream of the project sites.

The design of drop structures was reviewed and modified by fisheries biologists. As a result, project construction will improve the ability of fish to migrate upstream and downstream through the project area. The project will install structures and reconfigure the creek channel in a number of locations that currently have barriers to fish passage. A total of 13 impassable drops will be replaced with fish passable structures. In addition, all 6 culvert replacements will have low flow channels with baffles that provide suitable passage for fish.

Based on existing sedimentation features in the channel bottom at the West Edith Avenue, Foothill College, and Adobe Creek Estates sites, stream sediments are expected to quickly fill the interstices of the rock-lined channel bed at the channel modification sites. As naturally deposited material accumulates within the riprap lined channel bed these portions of the channel bed will acquire functions associated with a natural channel bed, such as water filtration and potential for colonization by aquatic invertebrates and hydrophytic vegetation. It should be noted that approximately 50% of the existing artificially lined channel bed areas at the West Edith Avenue and Foothill college channel modification sites and at the Adobe Creek Estates site are overlain with 1 to 12 inches of naturally deposited sand and gravel.

The perennial pools above and below drop structures at the Foothill College site to be widened and resurfaced will provide habitat values similar to the pre-construction condition. These pools will likely be recolonized by watercress. Similar to the pre-project condition, the reconstructed pools will provide habitat for amphibians (eg. Pacific tree frog and western toad), common aquatic insects, and fish such as threespine sticklebacks.

2.3.1.1 Time Lapse. Approximately 1.35 acres of tributary waters should be established 2-3 years after project completion under average rainfall conditions.

2.3.2 CDFG Jurisdictional Area/Riparian Habitat

The first objective of the CDFG jurisdictional area mitigation is to effectively integrate the goals of flood control with that of habitat restoration at the channel modification sites where impacts to riparian habitat are the greatest. Consequently, at the Foothill College and West Edith Avenue channel modification sites flood plain terraces will be created within the banks of the creek channel and revegetated with native species appropriate to the site and elevation. The second objective was to restore high quality riparian habitat in disturbed gaps within the project area where riparian habitat has been impacted by previous land-use and channel modification.

A minimum of ~~2.35~~ 2.59 acres of riparian habitat will be restored within the Adobe Creek watershed to offset the loss of ~~1.4~~ 1.54 acres of riparian habitat, the majority of which is low to medium quality habitat (Table 4). The mitigation plan is designed to restore -a total of ~~2.6~~ 2.76 acres of high quality riparian habitat at five sites on Adobe Creek within the project area. The excess ~~0.25~~ 0.17 acres of restoration is a ~~buffer in case certain portions of restoration sites do not meet the success criteria~~ reserve for future mitigation needs. The planting plan is designed to improve the quality of riparian habitat within the project area for the suite of resident and migratory birds that utilize the Adobe Creek watershed. Most of the riparian mitigation area will be dominated by coast live oak and valley oak with an understory dominated by coffeeberry, coyote brush, California blackberry, and poison oak. Oak woodland riparian habitat is the predominant native habitat type within the project area. Many of the bird species that occur within the project area such as Oak Titmouse, White-breasted Nuthatch, Nuttall's Woodpecker, and Bushtit typically forage and breed in oak dominated habitats, and feed on the numerous insects supported by the oaks.

Due to the seasonality of flows and the incised nature of the Adobe Creek channel, willows are only a minor component of the existing riparian plant association at four of the five mitigation sites (willows are not present at West Edith Channel Modification Site). The seasonality of flows also lowers the potential for successful revegetation with willows. Therefore, a relatively small number of arroyo and red willow plantings will be installed on an experimental basis at three of the five mitigation sites (Foothill Expressway, West Edith Park, Adobe Creek Estates) where conditions are most likely to support willows on the lower channel bank. No performance or final success criteria will be attached to the experimental willow plantings. Should the willow plantings survive, they will improve riparian habitat for migrant birds such as Western Flycatcher, Yellow Warbler, Wilson's Warbler, and Western Tanager that utilize the Adobe Creek riparian corridor. Since the number of willows installed will be small compared to the total number of riparian plantings, low survival of willows would not compromise habitat quality at the mitigation sites.

In addition to improving habitat quality for birds, the habitat restored at the riparian mitigation sites will function to stabilize the channel banks and reduce the potential for erosion, shade the creek channel, and help conserve soil moisture.

2.3.2.1 Time Lapse. High quality riparian habitat will be created at the site within approximately 10-20 years of plant installation. However, the long-term habitat goal to provide a vertical structure comparable to a native riparian forest is not expected to be achieved for 50 or more years due to the growth rate of the trees to be planted.

3.0 PROPOSED MITIGATION SITES

Riparian restoration will be conducted at five mitigation sites within the project area (Sheet 3). The mitigation sites range in size from 0.3 to ~~0.7~~ 0.66 acres and have a total combined area of approximately ~~2.6~~ 2.76 acres (Table 5). The total area proposed for riparian mitigation (~~2.6~~ 2.76 acres) exceeds the acreage of riparian mitigation required (~~2.35~~ 2.59 acres) based on project impacts and the proposed mitigation ratios.

Table 5. Size of Riparian Mitigation Sites.

SITE **(listed in order of occurrence from downstream to upstream)**	**AREA (Acres)**
Foothill Expressway	~~0.5~~ 0.66
West Edith Avenue Channel Modification	0.3
West Edith Avenue Park	0.6
Foothill College Channel Modification	0.6
Adobe Creek Estates	0.6
Total	~~2.6~~ **2.76**

The following is a summary by mitigation site of the location, ownership status, existing functions and values, present and proposed uses of the site and adjacent areas, and effects of the mitigation plan on USACE jurisdictional areas.

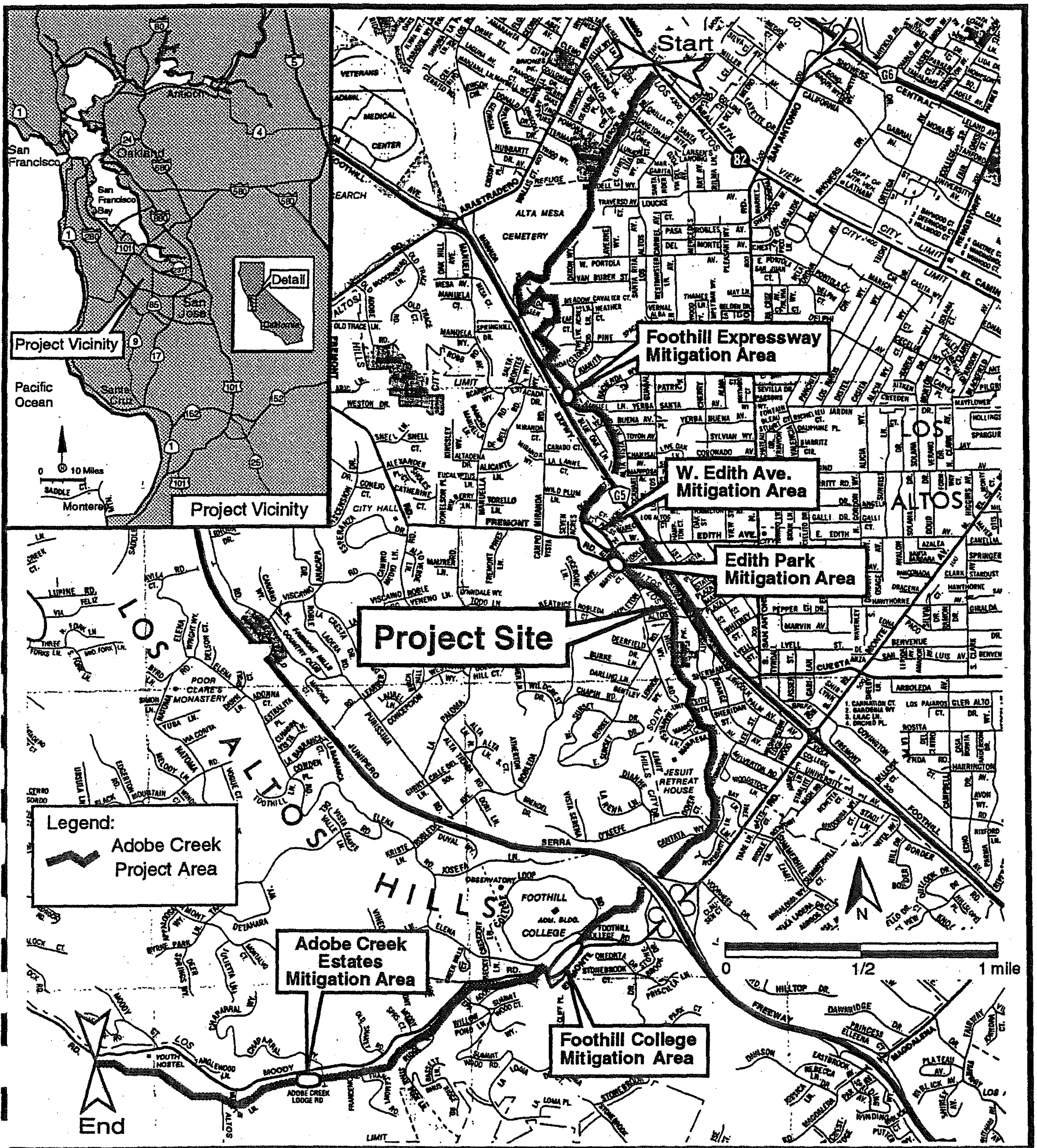
3.1 FOOTHILL EXPRESSWAY MITIGATION SITE

3.1.1 Location

This site is located in Reach 3, between the west bank of the creek and Foothill Expressway, between Stations 350+00 and 355+00. Foothill Expressway runs parallel to the creek near the site (Sheet 4). The site is a flat meadow, raised approximately 10 feet above the creekbed which curves around the site (Sheet 5). Since the site is located within a meander of the creek, the restored riparian community will occur in close proximity to the creek channel. The outer limit of the site is a maximum of 110 feet from the creek channel.

3.1.2 Ownership

The site is owned by the District.



PURPOSE: Reduce flooding erosion and sedimentation

DATUM: NGVD 1929

ADJACENT PROPERTY:
OWNERS: See attached listing

ADOBE CREEK WATERSHED
MITIGATION AND MONITORING PLAN

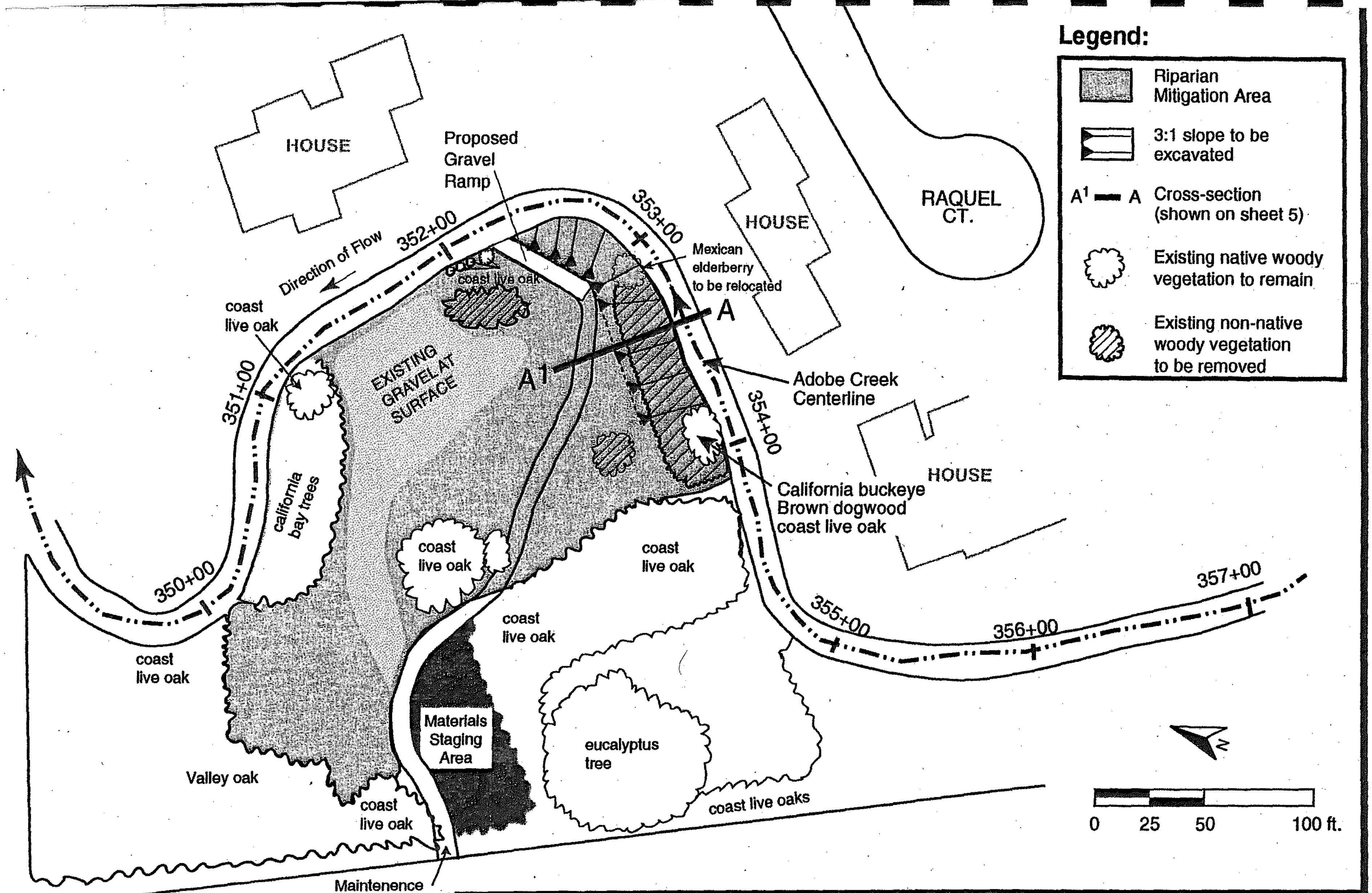
Mitigation Sites Location Map

SCALE: 1-inch: 0.5 miles
APPLICATION BY:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

FLOOD AND EROSION CONTROL

IN:
AT:
COUNTY OF: Santa Clara: CA
STATE: California

APPLICATION BY: SCVWD
Sheet 3 of 15 DATE: JANUARY 13, 1998



PURPOSE: Reduce flooding erosion and sedimentation

DATUM: NGVD 1929

ADJACENT PROPERTY:
OWNERS: See attached listing

ADOBE CREEK WATERSHED MITIGATION & MONITORING PLAN

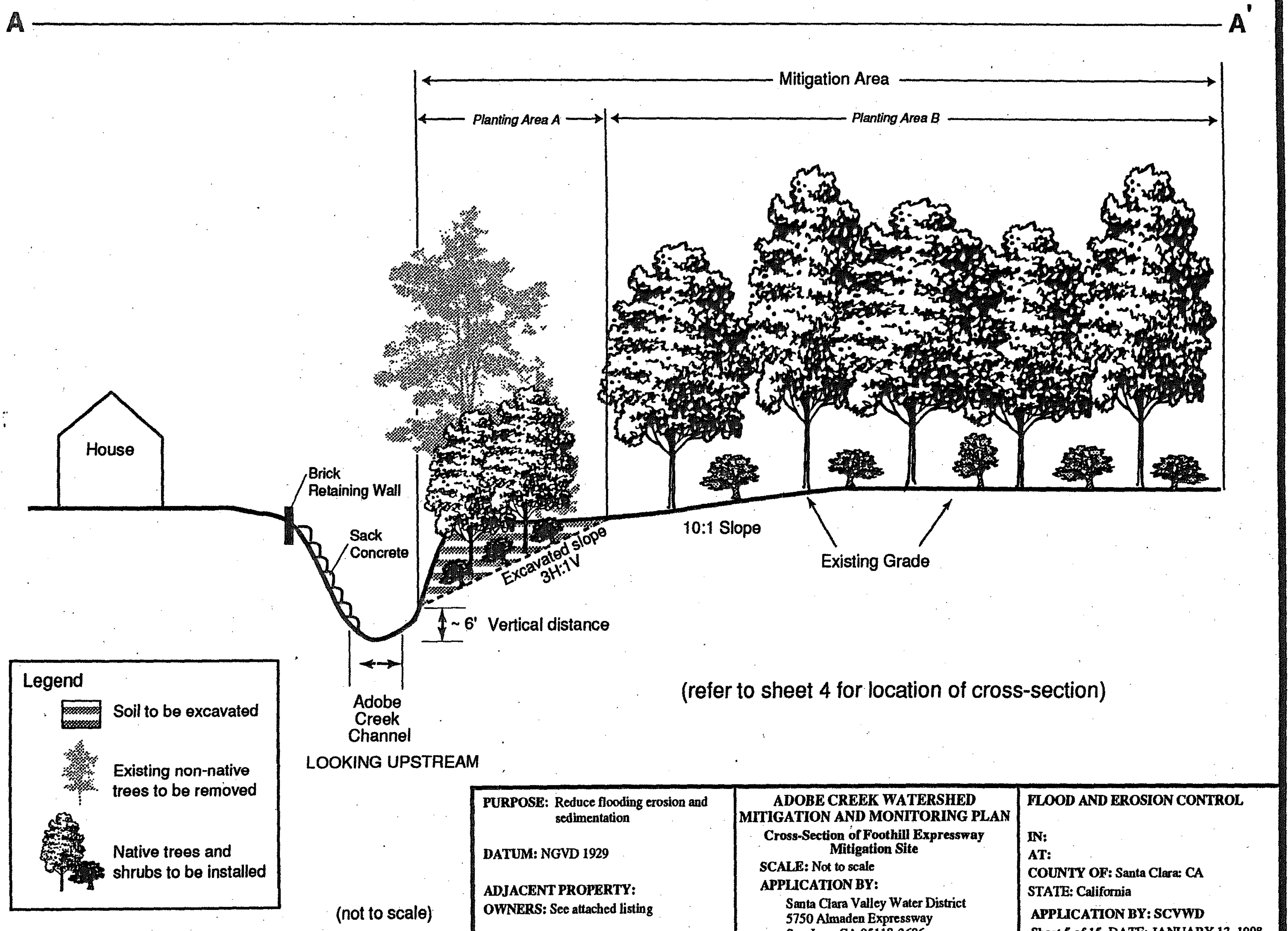
Plan View of Foothill Expressway Mitigation Site

SCALE: Not to Scale
APPLICATION BY:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

FLOOD AND EROSION CONTROL

IN:
AT:
COUNTY OF: Santa Clara: CA
STATE: California

APPLICATION BY: SCVWD
Sheet 4 of 15 DATE: JANUARY 13, 1998



PURPOSE: Reduce flooding erosion and sedimentation

DATUM: NGVD 1929

ADJACENT PROPERTY:
OWNERS: See attached listing

ADOBE CREEK WATERSHED
MITIGATION AND MONITORING PLAN
Cross-Section of Foothill Expressway Mitigation Site
SCALE: Not to scale
APPLICATION BY:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

FLOOD AND EROSION CONTROL

IN:
AT:
COUNTY OF: Santa Clara: CA
STATE: California
APPLICATION BY: SCVWD
Sheet 5 of 15 DATE: JANUARY 13, 1998

3.1.3 Existing Functions and Values

Due to removal of woody vegetation and disking for weed and fire control, the site is a degraded riparian community, dominated by non-native grasses and forbs with a low percent cover of woody plant species. Numerous small (DBH = 6 - 12 inches) coast live oaks are scattered along the upland edge and one larger coast live oak occurs within the proposed restoration area. The non-native grasses provide foraging opportunities for common granivorous bird and small mammal species. Tall blue gum trees rooted close to the Foothill Expressway could provide perches and nesting spaces for birds of prey. These mature blue gum would not be removed.

Due to the incised nature of the creek the site does not flood on a regular basis though it is within the 1% floodplain. The channel banks are steep and appear unstable. Approximately half of channel is shaded by existing trees with the remainder exposed. A grove of large California bay trees, rooted on the channel bank along the downstream edge , shade the creek channel and help stabilize the channel bank. Himalayan blackberry and poison oak occur in small patches along the creek bank. The lack of a well-developed shrub understory reduces the value of this site to wildlife including both resident and migratory birds. Numerous non-native pine trees (*Pinus* sp.), imported from Lebanon, were planted in a row at the top of the channel bank along the upstream portion of the site

3.1.4 Present and Proposed Uses of the Site and Adjacent Areas

The site is currently open space that is fenced off and owned by the District. Foothill Expressway is situated approximately 200 feet to the west of the site. The east side of the creek across from the mitigation site consists of residential development. A dirt access road (~15 feet wide) oriented east-west through the mitigation area is currently maintained by the District. The District will maintain this access road through the mitigation site in the future. Since this road is used infrequently by the District for occasional maintenance activities, disturbance to wildlife will be negligible. The District proposes to install an approximately 15 foot wide by 50 foot long gravel ramp where the access road traverses the channel bank.

3.1.5 Effects on USACE Jurisdictional Areas

The mitigation site will be located a minimum of 4 vertical feet above the channel bed and is outside of tributary waters.

3.2 WEST EDITH AVENUE CHANNEL MODIFICATION SITE

3.2.1 Location

This site is located in Reach 5, along the Adobe Creek channel, northwest of West Edith Avenue (between Stations 390+00 and 399+00), and is an integral part of the proposed channel modification at the site (Sheet 6). The mitigation site will be located on a mid-bank bench and 2:1 slope located on the southwest side of the modified creek channel above the rock lined channel bed

(Sheet 7). The mitigation site will be approximately 6 to 12 feet above the channel bed and immediately adjacent to the creek channel. The entire revegetation area will be 20 feet wide and 650 feet long.

3.2.2 Ownership

The site is currently privately owned. The right-of way that the District will require to construct the channel modification will allow for the use of the site as a mitigation area.

3.2.3 Existing Functions and Values

The channel banks throughout much of the site are lined with a variety of artificial surfaces including gunite, concrete, or wooden walls. Consequently, riparian habitat is precluded from development along much of the channel bank area. Himalayan blackberry thickets do occur along the channel banks in the upstream portion of the site and would provide some provide cover and food for ground nesting birds and small mammals. The majority of the vegetation growing at and beyond the top-of-bank, particularly in the upstream portion of the site consists of non-native trees associated with the landscaped properties that abut the creek (primarily large blue gum trees). Mature blue gum can provide roosting and nesting habitat for raptor species such as Red-tailed Hawks (*Buteo jamaicensis*) as well as food for insectivorous and nectivorous bird species. Other non-native trees along the creek include privet and acacia. Large redwood trees are located on the northeast bank, just outside of the project site and provide habitat for bird species such as Brown Creepers and Stellar Jays. Both the mature blue gum and the redwood serve to shade the creek channel. The landscape/naturalized vegetation of the streamside mixes with riparian forest toward the downstream end of the site. Approximately half of the channel bottom is lined with concrete. The channel bottom, as a consequence, is primarily unvegetated.

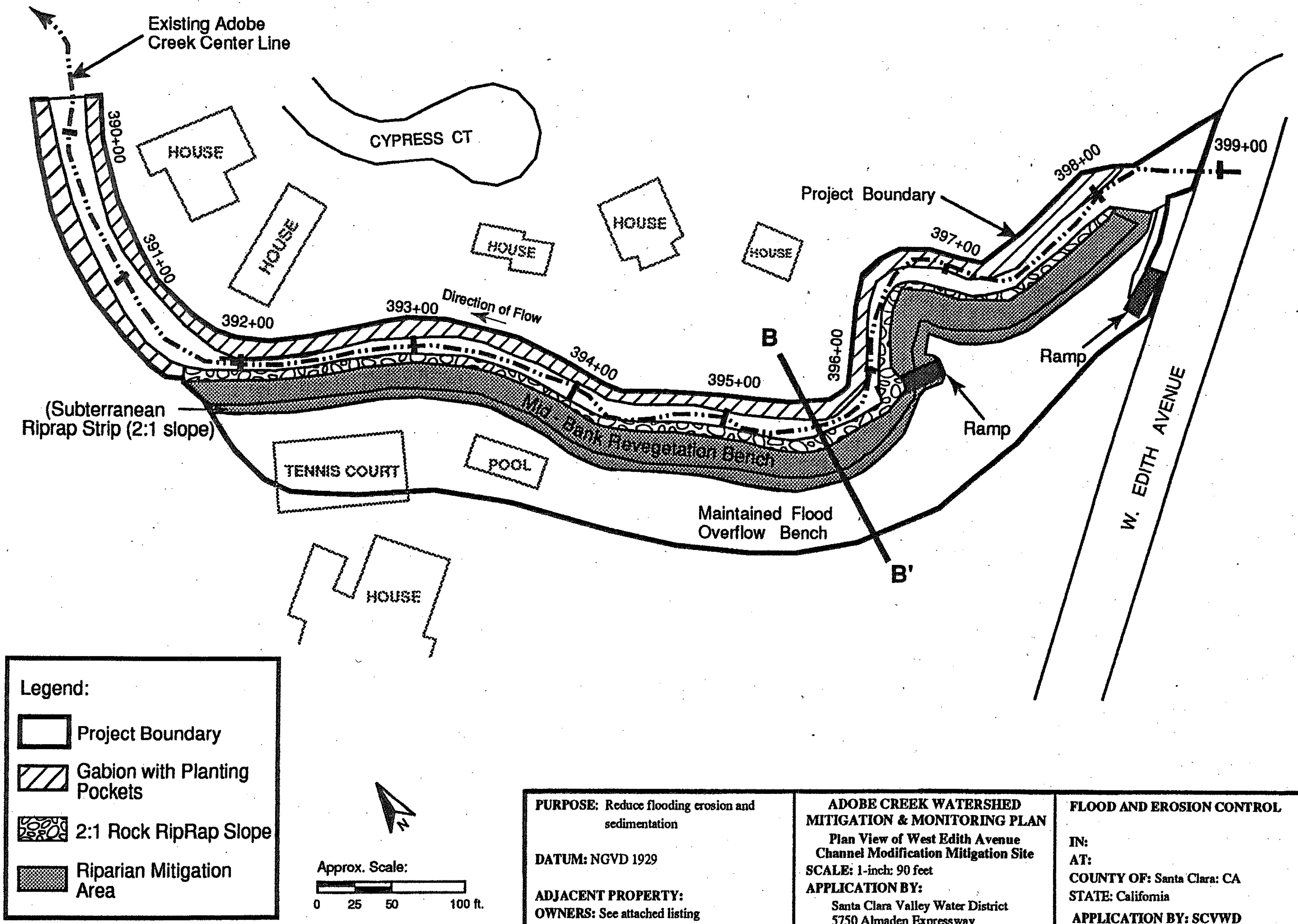
3.2.4 Present and Proposed Uses of the Site and Adjacent Areas

The upland portion of the site consists of landscaped/non-native vegetation, and of unvegetated developed areas including a swimming pool and tennis court. The District proposes to excavate a mid-level bench (riparian mitigation site) and a high-flow bench on the site.

The site is bordered by residential properties to the west, north, and east, and by open space consisting of landscaped/non-native vegetation to the south. The open space to the south is zoned for residential development.

3.2.5 Effects on USACE Jurisdictional Areas

The riparian mitigation site will be located outside of tributary waters and will not affect USACE jurisdictional areas. The channel bed will be widened and will increase the acreage of tributary waters by approximately 0.07 acres.



PURPOSE: Reduce flooding erosion and sedimentation

DATUM: NGVD 1929

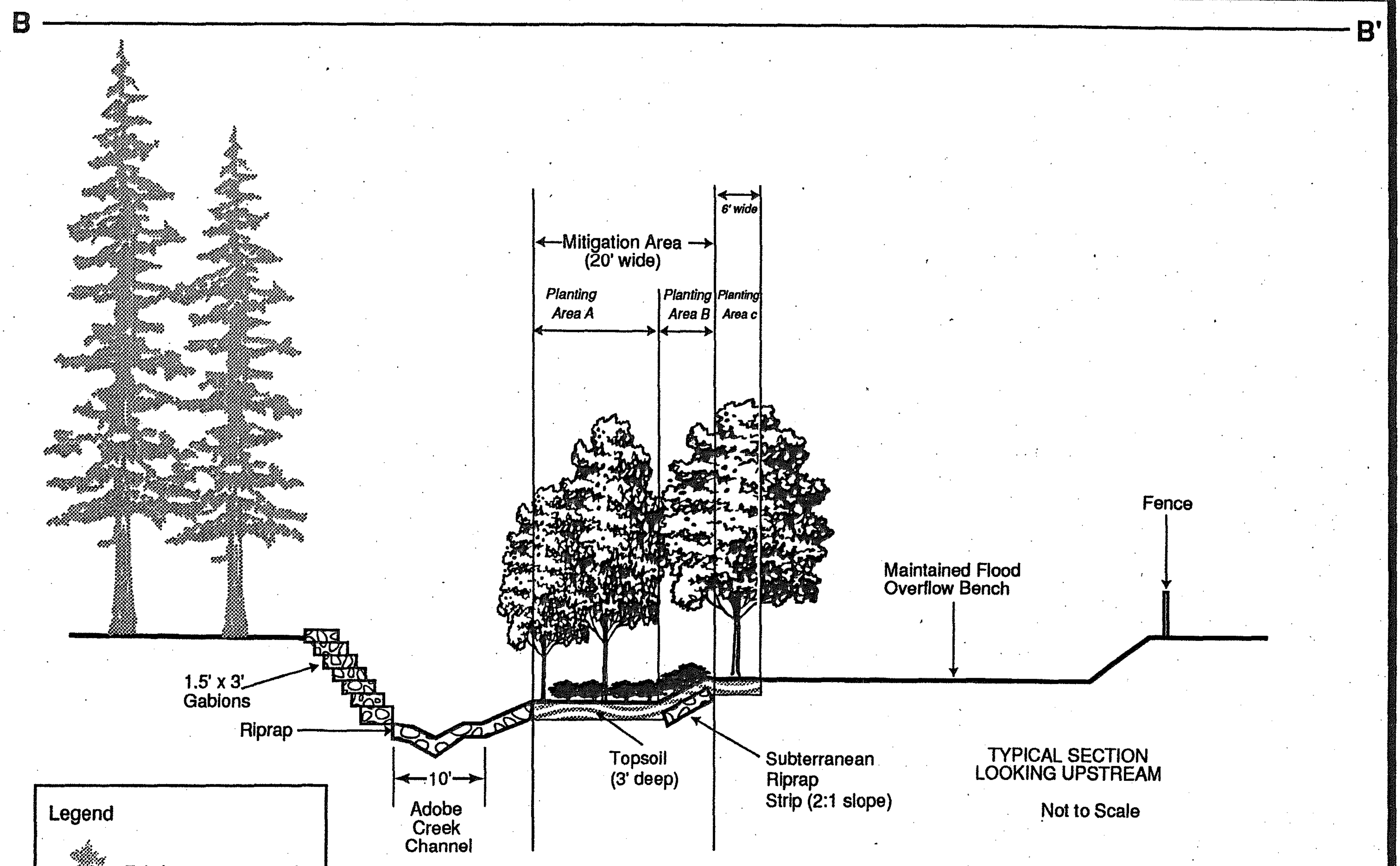
ADJACENT PROPERTY:
OWNERS: See attached listing

ADOBE CREEK WATERSHED
MITIGATION & MONITORING PLAN
Plan View of West Edith Avenue
Channel Modification Mitigation Site
SCALE: 1-inch: 90 feet
APPLICATION BY:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

FLOOD AND EROSION CONTROL

IN:
AT:
COUNTY OF: Santa Clara: CA
STATE: California

APPLICATION BY: SCVWD
Sheet 6 of 15 DATE: JANUARY 13, 1998



PURPOSE: Reduce flooding erosion and sedimentation

DATUM: NGVD 1929

ADJACENT PROPERTY:
OWNERS: See attached listing

ADOBE CREEK WATERSHED MITIGATION AND MONITORING PLAN
Cross-Section of West Edith Avenue Channel Modification Mitigation Site
SCALE: Not to scale
APPLICATION BY:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

FLOOD AND EROSION CONTROL

IN:
AT:
COUNTY OF: Santa Clara: CA
STATE: California
APPLICATION BY: SCVWD
Sheet 7 of 15 DATE: JANUARY 13, 1998

3.3 WEST EDITH AVENUE PARK MITIGATION SITE

3.3.1 Location

This site is located in Reach 5, between Adobe Creek and the intersection of West Edith Avenue and Fremont Road. The site is immediately upstream of the West Edith Avenue channel modification site and the West Edith Avenue crossing, between Stations 399+00 and 405+00 (Sheets 8 and 9). The site is located approximately 5 to 10 feet above the creek bed. The majority of the site is located within 60 feet of the creek channel and the maximum from the channel edge is 100 feet.

3.3.2 Ownership

The site is owned primarily by the Town of Los Altos Hills, with small portions along the creek under private ownership. The District will obtain all necessary conservation easements or other legal permission required prior to use of the site as a mitigation area.

3.3.3 Existing Functions and Values

A mixture of native and non-native trees and shrubs are scattered throughout the site. The density of trees and shrubs is relatively low and large gaps occur in the canopy. The tree species present include coast live oak, eucalyptus, ornamental plum, and redwood.. Non-native woody species predominate. A thick layer of eucalyptus mulch prevents the establishment of an herbaceous ground cover.. The habitat value to wildlife at this site is compromised by the lack of a well developed understory and herbaceous layer, the large gaps in the overstory, and the predominance of non-native plant species. Similar to the West Edith channel modification site, the mature eucalyptus can provide roosting and nesting habitat for raptor species and food for insectivorous and nectivorous birds.

3.3.4 Present and Proposed Uses of the Site and Adjacent Areas

The site is currently used by the community as a neighborhood park. The District has contacted the Town of Los Altos Hills and the Town is receptive to the idea of utilizing this portion of the park as a riparian mitigation area. Human intrusion will be discouraged by removal of an existing trail through the mitigation area, installation of a post and beam fence, and installation signs that inform visitors of the sensitive nature of the mitigation area. Residential development surrounds the site and the community park extends approximately 50 to 100 feet from the northwestern edge of the mitigation site to West Edith Avenue.

3.3.5 Effects on USACE Jurisdictional Areas

The mitigation site is located outside of tributary water and will not affect USACE jurisdictional areas.

PURPOSE: Reduce flooding erosion and sedimentation

DATUM: NGVD 1929

ADJACENT PROPERTY:
OWNERS: See attached listing

ADOBE CREEK WATERSHED MITIGATION AND MONITORING PLAN

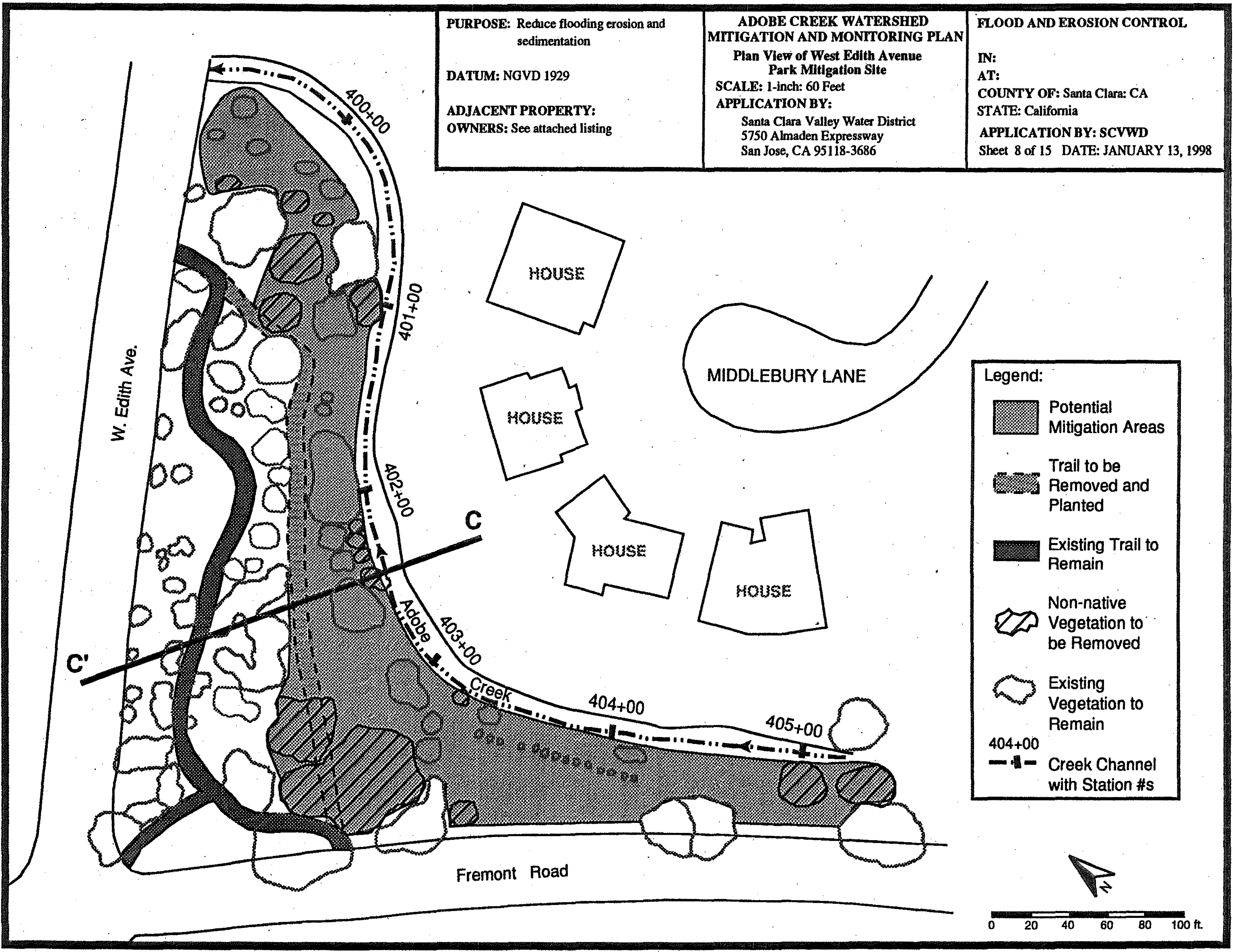
Plan View of West Edith Avenue Park Mitigation Site

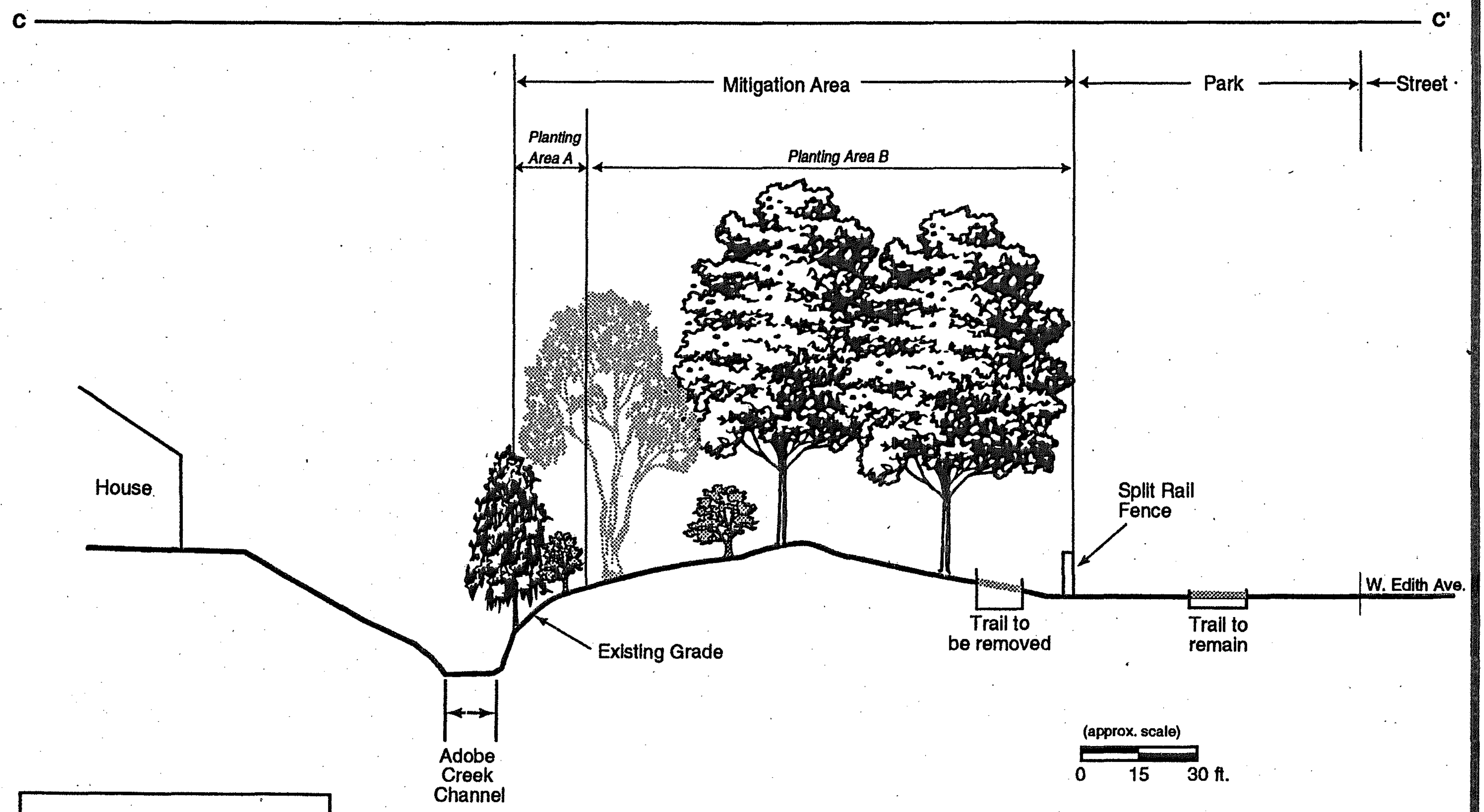
SCALE: 1-inch: 60 Feet
APPLICATION BY:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

FLOOD AND EROSION CONTROL

IN:
AT:
COUNTY OF: Santa Clara: CA
STATE: California

APPLICATION BY: SCVWD
Sheet 8 of 15 DATE: JANUARY 13, 1998





TYPICAL SECTION
LOOKING UPSTREAM

Legend

Non-native trees to be removed

Native trees and shrubs to be installed

PURPOSE: Reduce flooding erosion and sedimentation

DATUM: NGVD 1929

ADJACENT PROPERTY:
OWNERS: See attached listing

ADOBE CREEK WATERSHED
MITIGATION AND MONITORING
Cross-Section of West Edith Avenue
Park Mitigation Site
SCALE: 1-inch: 37 feet
APPLICATION BY:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

FLOOD AND EROSION CONTROL

IN:
AT:
COUNTY OF: Santa Clara: CA
STATE: California
APPLICATION BY: SCVWD
Sheet 9 of 15 **DATE:** JANUARY 13, 1998

3.4 FOOTHILL COLLEGE CHANNEL MODIFICATION MITIGATION SITE

3.4.1 Location

This site is located in Reach 11, along both banks of the creek, near Foothill College (between Stations 528+50 and 541+00), and is an integral part of the proposed channel modifications (Sheet 10). This segment of Adobe Creek flows through the Foothill College Campus, bordered on one side by a parking lot and on the other by a steep hillside which slopes up to El Monte Road. The position of the channel was altered during construction of the parking lot. The site extends from El Monte Road to the bridge across the entrance road to the College. The riparian mitigation area will be located on a created bench and 2:1 slope within the 1% floodplain approximately 8 vertical feet above the channel bed (Sheet 11).

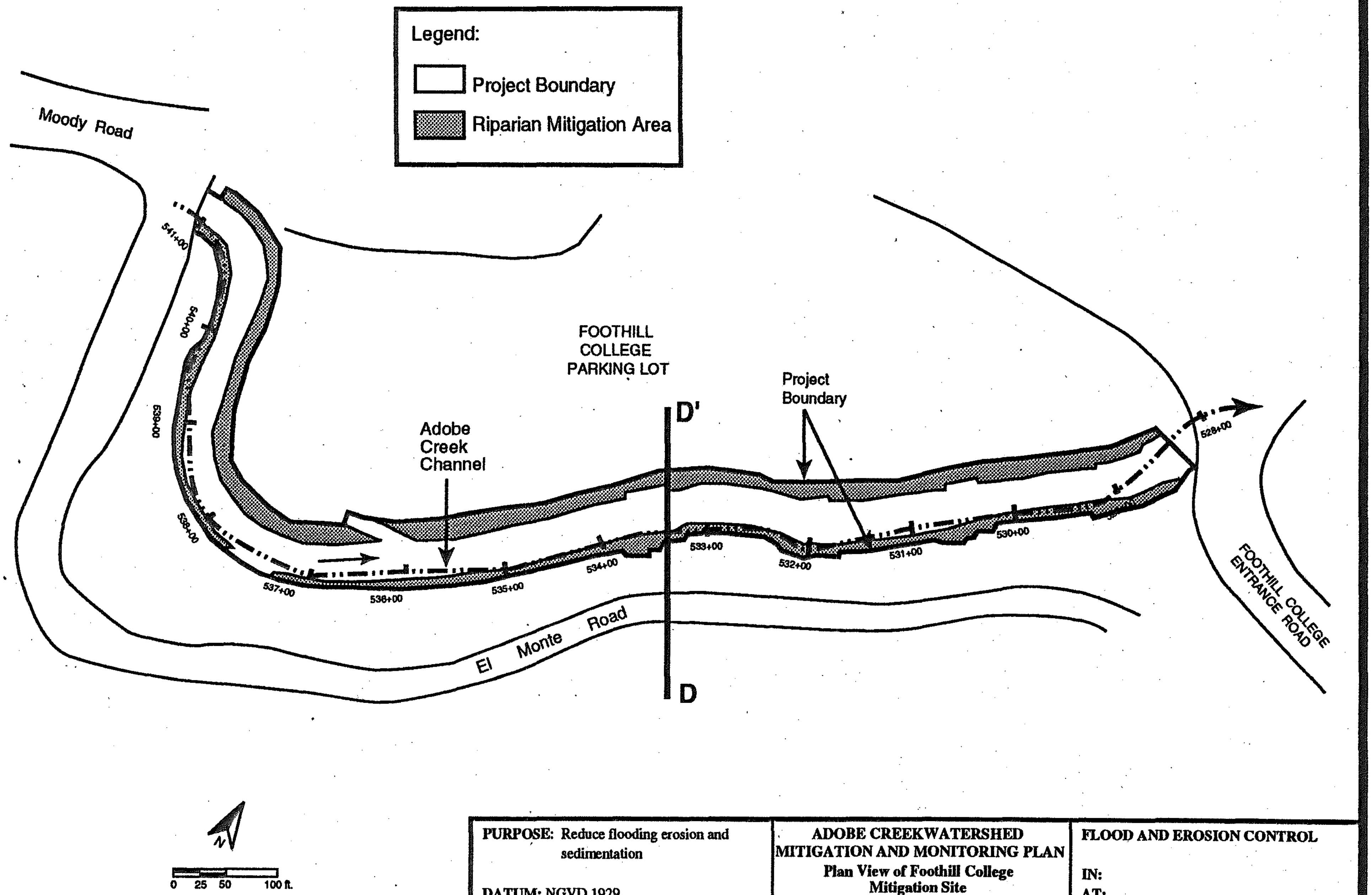
3.4.2 Ownership

This site is within the boundaries of Foothill College. The right-of-way that the District will require to construct the channel modification will allow for the use of the site as a mitigation area.

3.4.3 Existing Functions and Values

The Adobe Creek channel is a constructed channel at this location. Consequently, the channel is relatively linear and much of the channel bed and banks are lined with concrete, gunite and riprap. Native woody riparian vegetation is in the process of recolonizing the constructed channel banks and occurs in thin strips between the channel and El Monte Road on the south side and between the channel and the Foothill College parking lot on the north side. The riparian vegetation within these strips exhibits signs of disturbance such as a discontinuous tree canopy, a predominance of young trees, and patches of bare ground. The overstory is moderately dense where it occurs and is dominated by relatively small coast live oaks (DBH ~ 8 - 16 inches) on the upper banks and patches of arroyo and red willow on the mid to lower banks. Poison oak, Himalayan blackberry, coyote brush, and toyon comprise the shrub layer. The shrub layer is dense in some of the tree canopy gaps. The groundwater in this area is estimated to be 10 to 20 feet below ground surface.

Naturalized non-native grasses and weeds, and bare soils are located in open areas. Some planted coast live oak, non-native trees and scattered shrubs are also present on the upper banks of these areas, particularly in the downstream portion of the site. A strip of oleanders (*Nerium oleander*) lines the bank top between the upstream end of the parking lot and the exit from the bypass pipe.



PURPOSE: Reduce flooding erosion and sedimentation

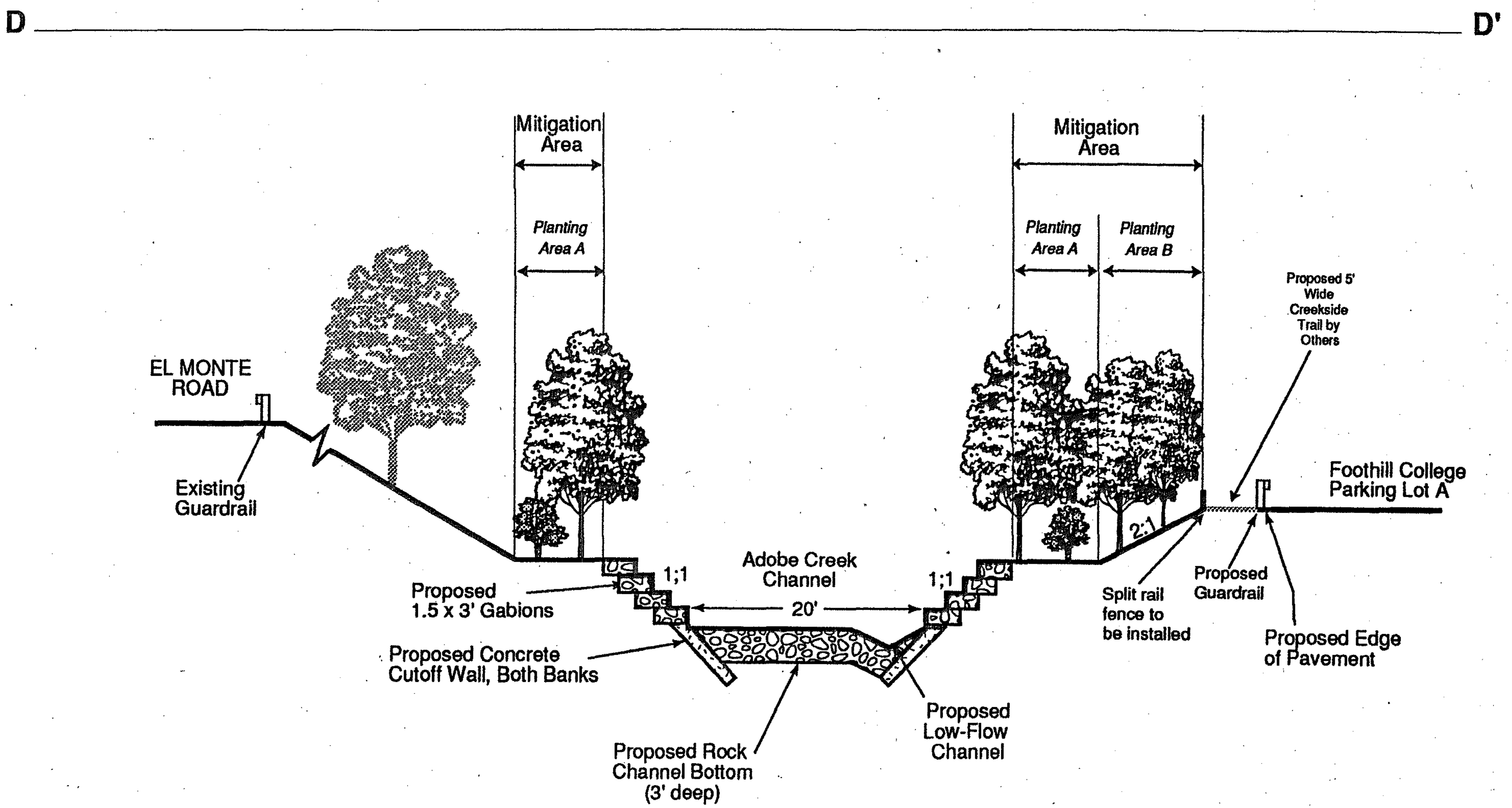
DATUM: NGVD 1929

ADJACENT PROPERTY:
OWNERS: See attached listing

ADOBE CREEKWATERSHED MITIGATION AND MONITORING PLAN
Plan View of Foothill College Mitigation Site
SCALE: 1-inch: 130 Feet
APPLICATION BY:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

FLOOD AND EROSION CONTROL

IN:
AT:
COUNTY OF: Santa Clara: CA
STATE: California
APPLICATION BY: SCVWD
Sheet 10 of 15 **DATE:** JANUARY 13, 1998


D
D'
Mitigation Area
Planting Area A
Mitigation Area
Planting Area A
Planting Area B
Proposed 5' Wide Creekside Trail by Others
EL MONTE ROAD
Existing Guardrail
Foothill College Parking Lot A
2:1
Adobe Creek Channel
1;1
1;1
20'
Proposed 1.5 x 3' Gabions
Split rail fence to be installed
Proposed Guardrail
Proposed Edge of Pavement
Proposed Concrete Cutoff Wall, Both Banks
Proposed Low-Flow Channel
Proposed Rock Channel Bottom (3' deep)

TYPICAL SECTION
LOOKING UPSTREAM

(not to scale)

Legend

Existing non-native trees to be remain

Native trees and shrubs to be installed

PURPOSE: Reduce flooding erosion and sedimentation

DATUM: NGVD 1929

ADJACENT PROPERTY:
OWNERS: See attached listing

ADOBE CREEK WATERSHED
MITIGATION AND MONITORING PLAN
Cross-Section of Foothill College Channel Modification Mitigation Site
SCALE: Not to scale
APPLICATION BY:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

FLOOD AND EROSION CONTROL

IN:
AT:
COUNTY OF: Santa Clara: CA
STATE: California
APPLICATION BY: SCVWD
Sheet 11 of 15 DATE: JANUARY 13, 1998

The mixed riparian habitat at this site provides a small corridor of habitat for some riparian and upland species. Bird species observed on the site include Western Scrub Jay (*Aphelocoma coerulescens*), Wrentit, Bushtit (*Psaltriparus minimus*), California Towhee (*Pipilo crissalis*), Song Sparrow (*Melospiza melodia*), and Lesser Goldfinch (*Carduelis psaltria*). Some mammals that are expected to occur include brush rabbit (*Sylvilagus bachmani*), deer mouse, and striped skunk. Reptiles and amphibians observed at this site include western fence lizard, Pacific treefrog (*Hylaregilla* sp.), and western toad (*Bufo boreas*). Other expected species include southern and northern alligator lizards, gopher snake, common kingsnake (*Lampropettis getula*), and sharp-tailed snake.

This reach exhibits perennial low-flows from an upstream seep and ephemeral patches of watercress. Threespine sticklebacks were observed in a few vegetated pools, some of which are formed by gunite barriers. Downstream barriers (O'Keefe Lane and downstream of Highway 280) prevent most other fish species from swimming up to this site. Resident rainbow trout, could wash into the site from the upper watershed during flood events, but suitable habitat for their survival does not exist in the project area.

3.4.4 Present and Proposed Uses of the Site and Adjacent Areas

The mitigation area along the northwestern side of the creek is currently part of the asphalt Foothill College parking lot. The mitigation area along the southeastern side of the creek is a relatively steep vegetated hillside that borders El Monte Road. A 5 foot wide creekside trail is proposed that would border the mitigation site between the site and the new edge of the Foothill College parking lot. The trail would be lined with a rock based natural material and would be designated for pedestrian, equestrian, and bicycle use.

3.4.5 Effects on USACE Jurisdictional Areas

The riparian mitigation site will be located on an excavated bench and slope located outside of tributary water and will not affect USACE jurisdictional areas. Channel widening will result in a net increase of 0.18 acres of tributary waters.

3.5 ADOBE CREEK ESTATES MITIGATION SITE

3.5.1 Location

This site is located in Reach 15 between Stations 594+00 and 602+00. It runs parallel to Moody Road beginning approximately 300 feet east (downstream) of Adobe Creek Lodge Road and extending approximately 600 feet west (upstream) of Adobe Creek Lodge Road (Sheets 12 and 14). Riparian habitat will be restored on the existing channel banks west (upstream) of Adobe Creek Lodge Road (Sheet 13) and on the northern channel bank and bench east (downstream) of Adobe Creek Lodge Road (Sheet 15).

3.5.2 Ownership

The site is privately owned. However, the Town of Los Altos Hills has conditioned the development to provide a maintenance easement to the District. This easement will allow the District to carry out riparian habitat restoration at this site.

3.5.3 Existing Functions and Values

The channel in this location was realigned and reconfigured during construction of the adjacent development. The new configuration consists of a linear 18 foot wide channel bottom with 2:1 side slopes. The channel bed and banks were created with angular, crushed concrete. Approximately 18 inches of soil was spread over the rushed concrete on the channel banks. The side slopes and tops of both banks have been hydroseeded. Due to this recent disturbance, the channel banks are dominated by non-native grasses and forbs of low value to wildlife. The northern bench downstream of Adobe Creek Lodge Road has been compacted due to the stockpiling of large rock and is the current location of an equestrian trail (Sheet 14). This bench is comprised of bare soil and non-native annual grasses and forbs.

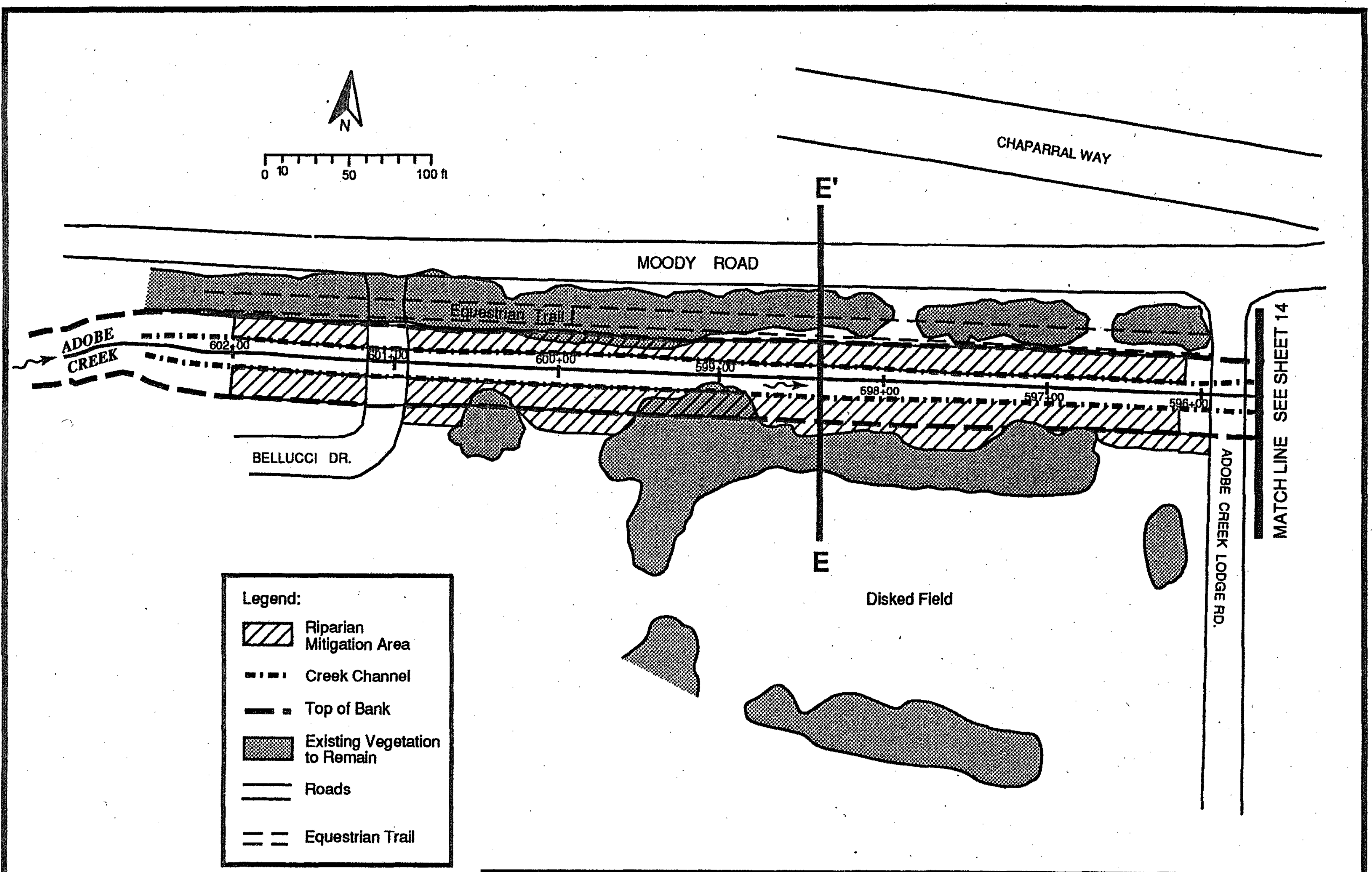
Sediment deposition on the rock-lined channel bed has begun to restore some natural riverine functions such as filtration of the low flow and provision of some substrate for colonization by hydrophytic vegetation and aquatic insect larvae. Recently recruited willow saplings are present at the toe of the channel bed and bank downstream of Adobe Creek Lodge Road.

3.5.4 Present and Proposed Uses of the Site and Adjacent Areas

A 12 to 35 foot wide bench at the top of the northern bank is currently used as an equestrian trail. A line of ornamental cedars (*Cedrus sp.*) and coast live oak occupies a narrow strip between the equestrian trail and Moody Road. At the top of the southern bank, upstream of Adobe Creek Lodge Road, a 12 to 15 foot wide open area extends to a line of ornamental trees. A few large houses are being constructed adjacent to the south side of the creek. Nearby residents have planted mostly non-native tree species along the top of the creek banks upstream of Adobe Creek Lodge Road.

3.5.5 Effects on USACE Jurisdictional Areas

The majority of the mitigation area is above the ordinary high water (OHW) mark while the lower elevation portions of the site are below the OHW mark and within USACE jurisdiction. The restoration of willow dominated riparian habitat within USACE jurisdiction will enhance the value of this area.



PURPOSE: Reduce flooding erosion and sedimentation

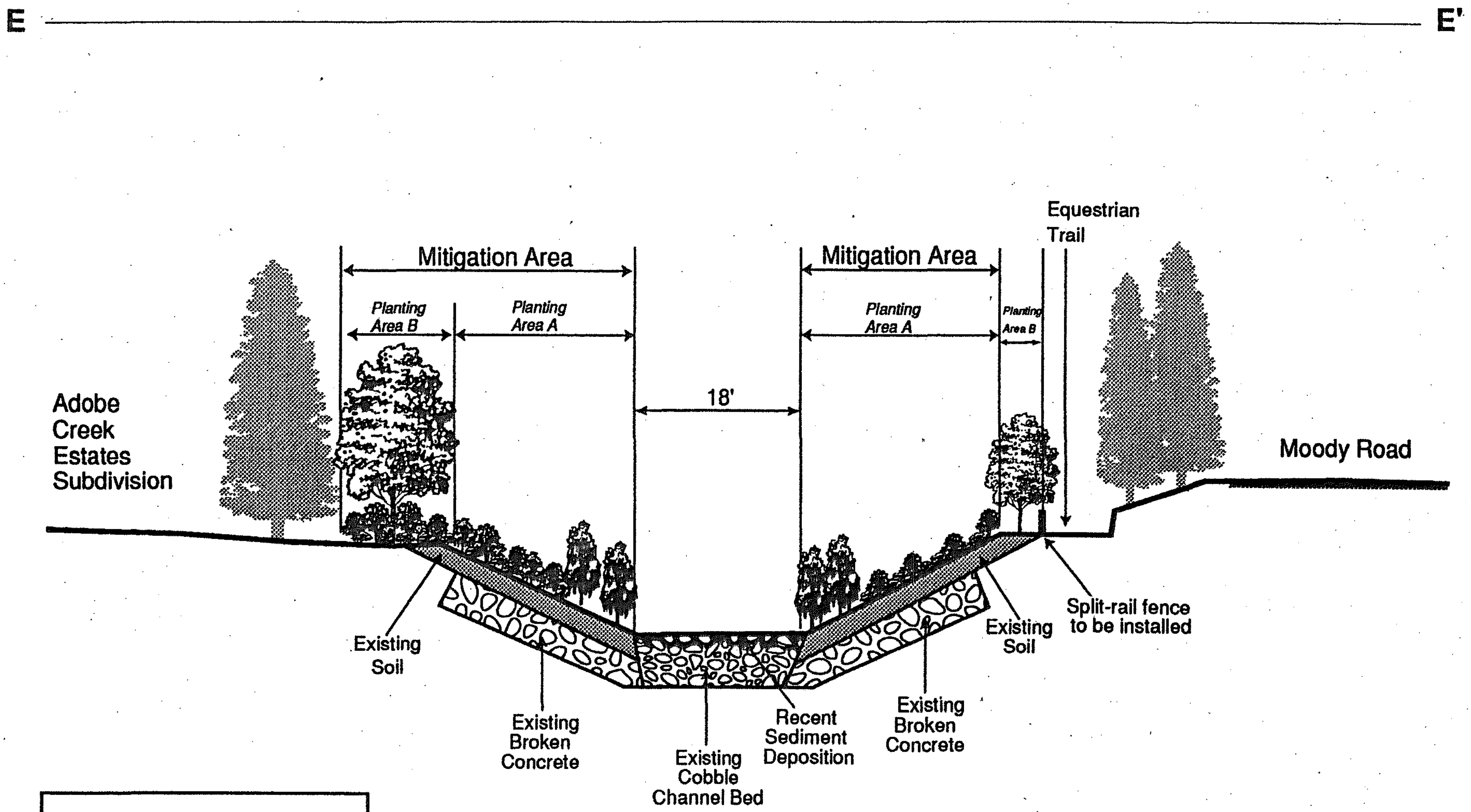
DATUM: NGVD 1929

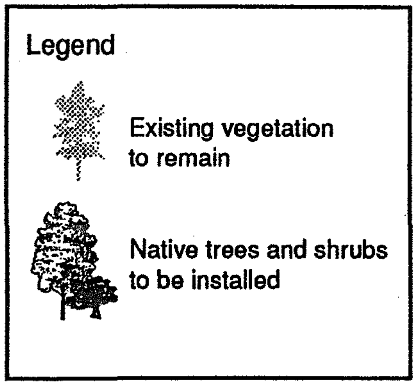
ADJACENT PROPERTY:
OWNERS: See attached listing

ADOBE CREEK WATERSHED
MITIGATION AND MONITORING PLAN
Plan View of Adobe Creek Estates
Mitigation Site
SCALE: 1-inch: 80 feet
APPLICATION BY:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

FLOOD AND EROSION CONTROL

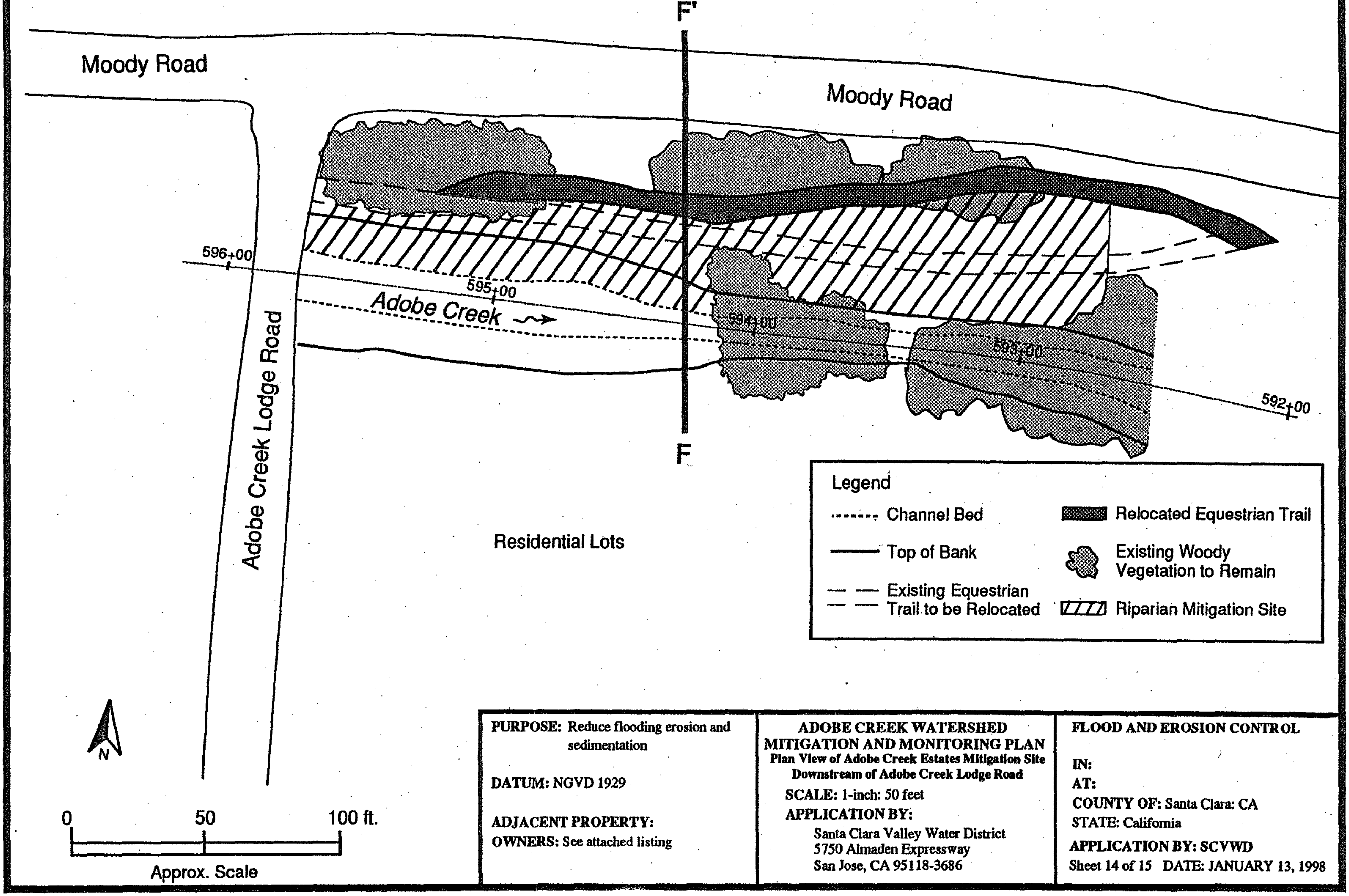
IN:
AT:
COUNTY OF: Santa Clara: CA
STATE: California
APPLICATION BY: SCVWD
Sheet 12 of 15 DATE: JANUARY 13, 1998




Legend
Existing vegetation to remain
Native trees and shrubs to be installed

TYPICAL CROSS-SECTION LOOKING UPSTREAM FROM ADOBE CREEK LODGE ROAD

PURPOSE: Reduce flooding erosion and sedimentation **DATUM:** NGVD 1929 **ADJACENT PROPERTY:** **OWNERS:** See attached listing	**ADOBE CREEK WATERSHED** **MITIGATION AND MONITORING PLAN** **Adobe Creek Estates Mitigation Site** **Upstream of Adobe Creek Lodge Road** **SCALE:** Not to scale **APPLICATION BY:** Santa Clara Valley Water District 5750 Almaden Expressway San Jose, CA 95118-3686	**FLOOD AND EROSION CONTROL** **IN:** **AT:** **COUNTY OF:** Santa Clara: CA **STATE:** California **APPLICATION BY: SCVWD** Sheet 13 of 15 **DATE:** JANUARY 13, 1998



PURPOSE: Reduce flooding erosion and sedimentation

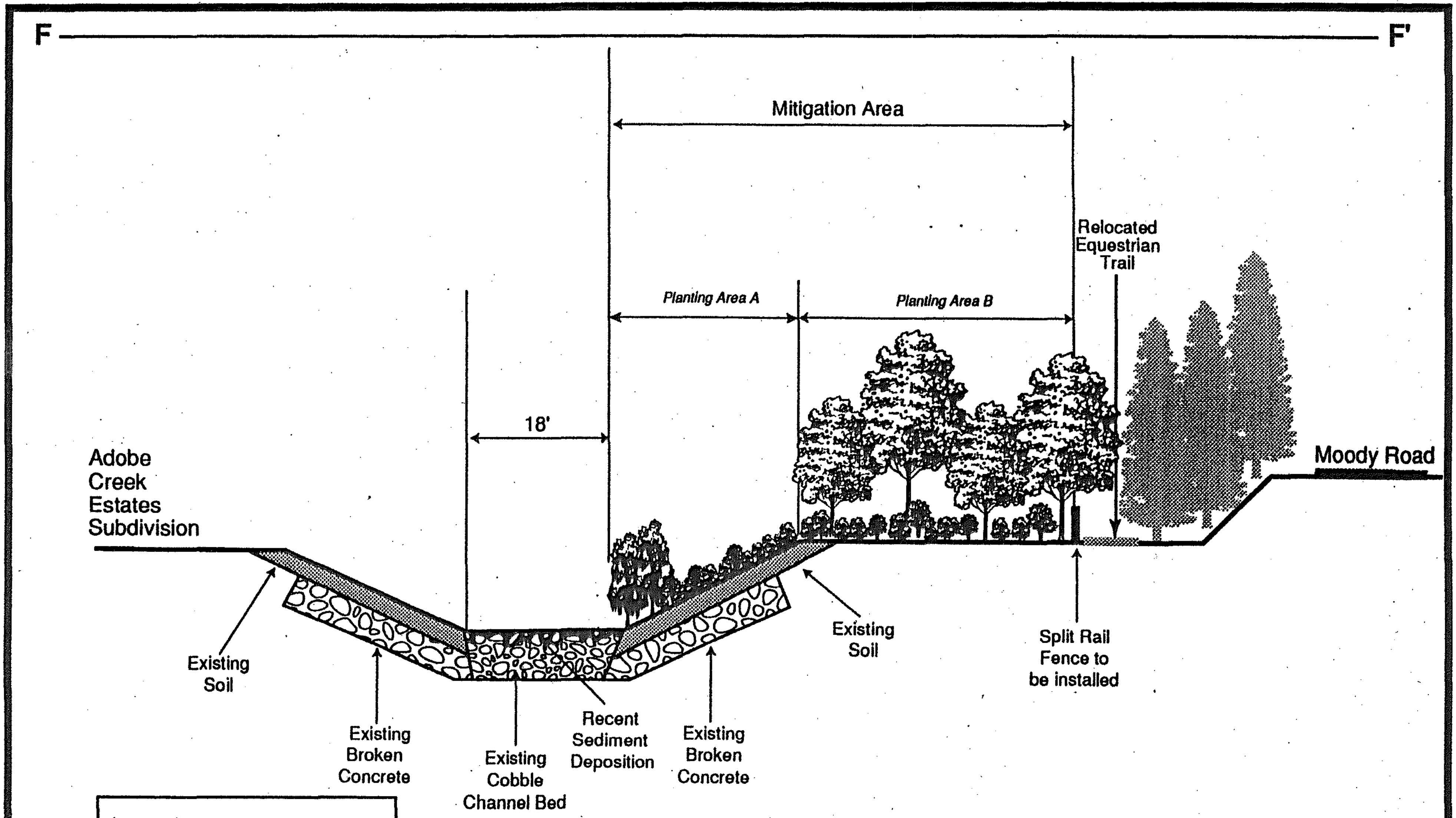
DATUM: NGVD 1929

ADJACENT PROPERTY:
OWNERS: See attached listing

ADOBE CREEK WATERSHED
MITIGATION AND MONITORING PLAN
Plan View of Adobe Creek Estates Mitigation Site
Downstream of Adobe Creek Lodge Road
SCALE: 1-inch: 50 feet
APPLICATION BY:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

FLOOD AND EROSION CONTROL

IN:
AT:
COUNTY OF: Santa Clara: CA
STATE: California
APPLICATION BY: SCVWD
Sheet 14 of 15 DATE: JANUARY 13, 1998


F
F'
Mitigation Area
Relocated Equestrian Trail
Planting Area A
Planting Area B
18'
Adobe Creek Estates Subdivision
Moody Road
Existing Soil
Existing Broken Concrete
Existing Cobble Channel Bed
Recent Sediment Deposition
Existing Broken Concrete
Existing Soil
Split Rail Fence to be installed

TYPICAL CROSS-SECTION LOOKING UPSTREAM

Legend

🌲 Existing ornamental trees to remain

🌳 Native trees and shrubs to be installed

PURPOSE: Reduce flooding erosion and sedimentation

DATUM: NGVD 1929

ADJACENT PROPERTY:
OWNERS: See attached listing

ADOBE CREEK WATERSHED
MITIGATION AND MONITORING PLAN
Adobe Creek Estates Mitigation Site
(downstream of Adobe Creek Lodge Road)
SCALE: Not to scale
APPLICATION BY:
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

FLOOD AND EROSION CONTROL

IN:
AT:
COUNTY OF: Santa Clara: CA
STATE: California
APPLICATION BY: SCVWD
Sheet 15 of 15 DATE: JANUARY 13, 1998

4.0 IMPLEMENTATION PLAN

The following section provides the conceptual design for the restoration of approximately 2.6 acres of riparian habitat at five mitigation sites within the project area on Adobe Creek. This riparian mitigation plan is designed to compensate for direct impacts to riparian habitat and to CDFG jurisdictional areas.

4.1 IMPLEMENTATION SUCCESS

H.T. Harvey and Associates has designed many successful riparian mitigation projects. The two restoration specialists who designed this project have over 20 years of combined experience in restoration and revegetation and believe the proposed mitigation areas will offer excellent opportunities to create high quality riparian habitat. The engineering design process for the flood control project may introduce unforeseen constraints which could change the anticipitated post-construction soil and hydrologic conditions. The District will therefore assess the post-construction soil and hydrologic conditions and adjust the implementation and planting plans to accommodate these conditions. Currently, the mitigation sites support ruderal habitat with patches of remnant riparian habitat and planted, non-native trees. The installation of native riparian vegetation will improve the wildlife habitat values at these sites and provide greater continuity of native riparian habitat along Adobe Creek in the project area. Moreover, the flood and erosion control measures proposed by the District will improve the stability of the creek banks and provide a more stable substrate for riparian habitat development.

4.2 RESPONSIBLE PARTIES

Mitigation site construction, maintenance, and monitoring will be funded by the District. Scott Wilson and Vickie Germany are the contact persons for the District and can be reached at (408)927-0710. The District will employ a restoration ecologist with riparian habitat restoration experience to ensure that the mitigation sites are properly constructed and monitored.

4.3 SITE PREPARATION/GRADING

Major grading will occur at the West Edith Avenue and Foothill College Channel Modification sites only. The Foothill Expressway and West Edith Avenue Park sites will require some grading to smooth the contours. Grading will be limited to the dry season (April 15 - October 15). Prior to grading, a temporary fence will be installed between the outer canopy of all riparian vegetation to be saved and the limits of grading. In accordance with the best management practices outlined in the Engineers Report (District 1996) and the SWPPP, erosion control measures including installation of erosion control blankets, reinforced silt fences, hay bales, and/or seeding with native grass and forb species, will be employed to ensure that sedimentation of the creek is avoided during and after grading. An erosion control specialist will be consulted on necessary erosion control measures.

Pre-construction surveys for nesting raptors will be conducted by a qualified raptor biologist if riparian vegetation will be removed during raptor nesting season (February-July). The raptor biologist will establish a construction area buffer zone around the nest, if an active nest site is discovered. The proposed buffer zone will be submitted to CDFG for approval prior to the start of vegetation removal. A take permit from CDFG will be required before a tree containing an active raptor nest can be removed.

4.3.1 Foothill Expressway Mitigation Site

Sheet 5 shows the site in typical cross-section. The eastern bank of the creek channel at the upstream third of the site is very steep (< 1:1) and the slope just upstream of the existing access ramp is failing. To stabilize this bank for planting, approximately 100 linear feet of the channel bank will be graded to a create a 3:1 slope (Sheets 4 and 5).. The toe of excavation of this slope will begin above the OHW mark at a minimum of 4-6 vertical feet above the channel bed. A patch of native riparian vegetation comprised of brown dogwood (*Cornus glabrata*), California buckeye, and coast live oak, rooted on the channel bank in the upstream corner of the site will not be disturbed (Sheet 4). The topsoil will be stockpiled during excavation of the channel bank. After grading of the 3:1 slope, a qualified restoration ecologist will examine the resulting soils to determine if the soil depth and texture is suitable for the proposed plantings. If the post grading depth to subsoil on portions of the 3:1 slope is less than 2 feet, topsoil stockpiled during the excavation should be spread on these areas to assure that at least 2 feet of topsoil is present throughout the slope. The resulting slope should be lightly compacted. Erosion protection measures such as native grass seeding and/or erosion control blankets will be implemented to reduce the potential for the soil to be scoured out by floods before riparian vegetation becomes established and provides erosion protection. Existing gravel spread over the soils surface in the northeastern portion of the site will be removed from the site. A staging area for gravel and baserock storage will be located outside of the restoration area as shown in Sheet 4 of 15.

Planting will be fitted in and around the existing native trees and an 18 foot wide maintenance access corridor (Sheet 4 of 15). The site will be cleared and grubbed of all non-native vegetation including the alien pine trees (Note: the large eucalyptus tree adjacent to the western end of the mitigation site will not be removed). Existing native trees and shrubs will not be disturbed except where they occur on the slope to be excavated. One mature native tree, a Mexican elderberry, occurs near the top of bank close to the gravel ramp on the slope to be excavated. A reasonable effort will be made to salvage and transplant this tree in a suitable location within the mitigation area prior to excavation of the slope. It may not be possible to follow ideal procedures and remove this tree during the dormant season. The tree will likely be removed during dry season site construction, transplanted to an adjacent location within the mitigation area that will not be graded, and temporarily irrigated until irrigation lines are installed. A restoration ecologist or arborist will provide guidance during transplantation of this tree.

4.3.2 West Edith Avenue Channel Modification Mitigation Site

Construction plans for the channel modification include widening of the creek bed, lining of the channel bed and lower portion of the southwest bank with un-grouted rock (3 foot thickness), installation of gabion steps along the northeast bank, and excavation of mid-bank and high flow benches along the southwest side of the creek. The mid-bank bench and the 2:1 slope between the mid-bank and high flow benches will serve as the riparian restoration site (Sheet 7). The riparian revegetation effort will take place following construction of the gabion and rock lined channel.

The mid-bank bench will be constructed with topsoil (stockpiled during site excavation) in the upper three feet and native subsoil below and will be elevated approximately 3 feet above the channel bed. The 2:1 slope will be composed of 1.5 feet of topsoil overlying a buried 3 foot thick riprap barrier. This riprap barrier will protect against erosion under high flow conditions. The riprap barrier does not underlie the mid-bank bench and so will not impede the growth of tree roots on the bench. Compaction should be minimized during construction of the mid-bank bench and, if necessary, the mid-bank bench will be ripped to a depth of 2 feet to relieve compaction following construction. Erosion protection measures such as erosion control blankets and/or native grass seeding will be implemented to reduce the potential for the soil to be scoured out by floods before riparian vegetation becomes established and provides erosion protection.

4.3.3 West Edith Avenue Park Mitigation Site

Sheet 9 shows the site in typical cross-section. Similar to the Foothill Expressway mitigation site, restoration plantings will be fitted in and around the existing native trees. All non-native plants within the mitigation site will be removed. Eucalyptus rooted beyond the top of the creek bank will be cut down and the stump and roots will be removed to prevent resprouting. Eucalyptus rooted on the creek bank will be cut down and treated with an appropriate herbicide to prevent resprouting. A certified pest control advisor should be consulted to provide guidance on herbicide treatments. The planted redwood (*Sequoia sempervirens*) within the mitigation site will also be removed as they are not native to this area. Existing native woody species will not be disturbed. Light grading will be conducted to remove the layer of wood chips and piles of dirt on site. The site will be lightly graded to provide a gently sloping gradient toward the creek. The existing dirt pathway will be ripped to a depth of at least 18 inches to relieve compaction and facilitate plant establishment.

The following measures will be employed to minimize disturbance of the site by people utilizing the park:

1. Leave a 20 to 45 foot space between the existing trail to remain and the mitigation site (Sheet 8).

2. Install a 4 foot high split rail fence along the northwestern edge of the mitigation site.

3. Install informative signs along northwestern edge of mitigation site that indicate the location of the sensitive habitat restoration area. These signs could be interpretive as well.

4.3.4 Foothill College Channel Modification Mitigation Site

Channel modification at this site involves widening the channel bed, installing a 3 foot thick layer of rock on the channel bed, installing gabion steps (baskets) along each channel bank, and excavating a mid-bank bench and 2:1 slope above the gabion steps on both sides of the creek. The mitigation area will consist of mid-bank benches and 2:1 slopes on the right and left banks (Sheet 11). The revegetation areas will be 10-20 feet wide on each bank, along 1,250 feet of channel. The revegetation effort will occur following construction of the gabion-lined channel.

The benches and slope will be constructed with topsoil in the upper three feet. An effort should be made to match the texture of the imported topsoil to that of the soil below. Compaction should be minimized during construction of the mid-bank bench and, if necessary, the mid-bank bench will be ripped to relieve compaction following construction. To deter human intrusion into the mitigation site a split rail fence will be installed along the northern limit of the site between the site and the adjacent proposed trail.

4.3.5 Adobe Creek Estates Mitigation Site

Sheets 13 and 15 show the site in typical cross section. Non-native trees such as redwood, recently planted within the mitigation site upstream of Adobe Creek Lodge Road, will be removed and relocated prior to planting of native species. The bench immediately adjacent to the northern creek bank downstream (east) of Adobe Creek Lodge Road has been compacted due to the storage of concrete, passage of heavy trucks, and use as an equestrian trail (Sheet 14). Before planting, this bench (approximately 230 feet long by 35 feet wide) should be ripped to a depth of approximately 24 inches and disked to relieve compaction. If the level of existing compaction and the configuration of the site preclude ripping to a depth of 24 inches, the site will be ripped to a minimum depth of 12 inches.

Subterranean concrete will be removed from the two foot diameter planting holes where trees will be planted on the channel bank. Subterranean concrete will not be removed from the lowermost 4 feet of the channel bank.

4.4 PLANTING PLAN

The planting plan is designed to facilitate the development of self-sustaining riparian plant communities dominated by species native to the Adobe Creek watershed and planted where edaphic and hydrologic conditions should be suited to each species requirements for growth and reproduction. The planting palette at each mitigation site was chosen based on the composition of native species growing at and adjacent to the impact sites under conditions similar to those predicted to occur at the mitigation site. Since the mitigation sites are situated in and amongst the impact sites, the selection of species based on observations of vegetation near the mitigation sites is also reflective of the vegetation to be removed at the impact sites.

The dominant species chosen for each site (Table 6) and the recommended on-center spacing (Table 7) for each species is designed to facilitate the development of high quality riparian habitat for the resident and migratory bird species that utilize the Adobe Creek riparian corridor (see Section 2.3.2).

Bird abundance and diversity in riparian corridors tends to be highest where the native plant community is densely vegetated with a well developed vertical structure (i.e. high percent cover of understory, mid-level, and overstory canopies) (Rottenborn, S.C. 1997). Bird use tends to be higher where a dense overstory co-occurs with a dense understory as opposed to areas where shrubs and trees are separated in horizontal space. Therefore, the recommended on-center spacings are relatively dense (Table 7). This high planting density should result in complete coverage after thinning due to natural selection.

Among the shrub species that occur within the project area, California blackberry and poison oak thickets provide the highest habitat value to birds. The planting plan seeks to establish California blackberry as a dominant species wherever the moisture and light regime is likely to be conducive or should not preclude it's growth. Poison oak is not recommended for active revegetation due to the difficulty in handling this species, however, it is anticipated that poison oak will recruit naturally where conditions are appropriate. Coffeeberry and coyote brush possess a lower habitat value to birds compared to California blackberry and poison oak, however, these species are relatively drought tolerant and easy to establish. Coyote brush grows rapidly providing cover early on in restoration site development for small mammals and ground dwelling birds and improves the site's microclimate by providing shade and protection from wind. Consequently, coffeeberry and coyote brush are recommended for planting in the drier portions of sites and coyote brush is especially recommended where sites will be underlain with subterranean riprap.

Table 6. Recommended Composition of Plant Community to be Installed at Riparian Mitigation Sites.

Mitigation Site	Planting Area	Planting Palette	Planting Position
Foothill Expressway	A (slope)	Tree Overstory:	
		California bay*	throughout slope
		box elder	top half of slope
		red willow	bottom half of slope
		arroyo willow	bottom half of slope
		Shrub Understory:	
		California blackberry**	throughout slope
		common snowberry	throughout slope
		California rose	throughout slope
		dogwood	throughout slope
	B (bench)	Tree Overstory:	
		coast live oak*	throughout
		valley oak*	closer to channel
		Mexican elderberry	throughout
		California buckeye	throughout
		Shrub Understory:	
		coffeeberry **	throughout
		coyote brush	throughout
		California blackberry**	closer to channel
West Edith Avenue Channel Modification	A (bench)	Tree Overstory:	
		coast live oak *	throughout
		valley oak	throughout
		California bay	throughout
		box elder	throughout
		California buckeye	throughout
		Shrub Understory:	
		California blackberry**	throughout
		coffeeberry	throughout
		common snowberry	throughout
	B (slope)	Tree Overstory:	
		Mexican elderberry	throughout on ~ 20 foot centers
		Shrub Understory:	
		coyote brush**	throughout
		coffeeberry	throughout
	C (top-of-bank)	coast live oak* valley oak Mexican elderberry	trees installed in a single row ~ 6 feet from hinge point

Note: Within site planting area locations are labeled on typical cross-section figures for each site.

* Dominant tree species to be planted.

** Dominant shrub species to be planted.

Table 6. (continued)

Mitigation Site	Planting Area	Planting Palette	Planting Position
West Edith Park	A	Tree Overstory:	
		California bay*	mid/upper bank
		red willow	lower bank
		arroyo willow	lower bank
		Shrub Understory:	
		California blackberry**	throughout
		California rose	throughout
	B	Tree Overstory:	
		coast live oak*	throughout
		valley oak*	throughout
		Mexican elderberry	throughout
		California buckeye	throughout
		Shrub Understory:	
		coffeeberry**	throughout
		coyote brush	throughout
		California blackberry**	close to the channel
Foothill College Channel Modification	A (bench)	Tree Overstory:	
		valley oak*	throughout
		coast live oak*	throughout
		California buckeye	throughout
		California bay	close to channel
		Shrub Understory:	
		California blackberry**	throughout
		coffeeberry	throughout
		California rose	throughout
	B (2:1 Slope)	Tree Overstory:	
		coast live oak*	throughout
		valley oak	bottom half of slope
		California buckeye	throughout
		Mexican elderberry	throughout
		Shrub Understory:	
		coffeeberry*	throughout
		coyote brush	throughout

Note: Within site planting area locations are labeled on typical cross-section figures for each site.

* Dominant tree species to be planted.

** Dominant shrub species to be planted.

Table 6. (continued)

Mitigation Site	Planting Area	Planting Palette	Planting Position
Adobe Creek Estates	A (Channel Banks)	Tree Layer:	
		red willow	along toe of bank
		arroyo willow	along toe of bank
		California bay*	mid/upper bank
		box elder	upper bank
		Shrub Layer:	
		coyote	mid/upper bank
		brush**California	mid/upper bank
		blackberry	mid/upper bank
		dogwood	upper bank
		coffeeberry	
	B (bench)	Tree Overstory:	
		valley oak*	throughout
		coast live oak*	throughout
		California bay	< 15 feet from
		California buckeye	channel
		Mexican elderberry	> 15 feet from
		Shrub Understory:	channel
		coffeeberry**	> 15 feet from
		Coyote brush	channel
		California blackberry**	
		dogwood	throughout
			throughout
			close to the channel
			close to the channel

Note: Within site planting area locations are labeled on typical cross-section figures for each site.

* Dominant tree species to be planted.

** Dominant shrub species to be planted.

Table 7. Recommended Plant Installation Specifications for Riparian Mitigation Sites.

Common Name	Latin Name	On-Center Spacing (feet)	Number of Individuals Installed/Group*	Container Size**
Trees:				
arroyo willow	*Salix lasiolepis*	10	4	treepot
box elder	*Acer negundo*	12	1	treepot
California bay	*Umbellularia californica*	16	3	deepot
California buckeye	*Aesculus californica*	12	1	treepot
coast live oak	*Quercus agrifolia*	16	3	treepot
Mexican elderberry	*Sambucus mexicana*	12	1	deepot
red willow	*Salix laevigata*	10	4	treepot
valley oak	*Quercus lobata*	16	1	treepot
Shrubs:				
California blackberry	*Rubus ursinus*	6	4	tree band
California wild rose	*Rosa californica*	6	4	deepot
coffeeberry	*Rhamnus californica*	8	1	deepot
common snowberry	*Symphoricarpos albus* var. *laevigatus*	8	4	deepot
coyote brush	*Baccharis pilularis*	10	1	deepot
dogwood	*Cornus sericea or Cornus glabrata*	10	1	deepot

* Group refers to a aggregate of individuals of the same species planted adjacent to one another at the specified on-center spacing.

** Tree pot is 4" x 14", dee pot is 2 1/2" x 10", and tree band is 2 1/4" x 5".

4.4.1 Plant Procurement

The container plants to be installed within the mitigation site will be contract grown. An effort will made to collect all propagules from within the Adobe Creek watershed at sites similar to the mitigation areas. If a sufficient supply of propagules for particular species is not available within the Adobe Creek watershed, the zone of collection will be expanded to adjacent drainages within Santa Clara and San Mateo Counties. Seeds and cuttings will be collected approximately one year prior to installation to allow sufficient time for the plants to grow before they are planted. Seeds and plugs for the target species are generally collected between late summer and early winter.

Coast live oak and valley oak acorns could be planted directly at the mitigation sites as an alternative to contract growing for these species. If this planting method is chosen, acorns should be collected and planted in fall of the same year.

4.4.2 Plant Installation

The plants will be installed between October 1 and March 15. The planting holes should be at least 2 feet in diameter and 2 feet deep. The sides and bottom of each hole should be scarified and each planting hole should be irrigated before planting and irrigated again immediately following planting. The plants will be installed so that their root crowns are at or slightly above (up to 1 inch) the soil surface following soil settlement after irrigation. Soil amendments should not be necessary. A 4-foot diameter indirect irrigation basin with a 6-inch high, 6-inch wide lip will be constructed around each plant.

4.4.3 Weed Control

Weeds around individual trees and shrubs at the riparian site will be controlled with woodchip mulch. A 3-inch thick layer of mulch will be placed around each plant within the 3-foot diameter irrigation basin. Wood chip mulch should be applied so that it does not contact plant stems. Weeds throughout the riparian planting areas will be controlled as described in the site maintenance plan.

4.4.4 Plant Protection

Browse damage to the riparian mitigation plantings from wildlife, specifically deer, could be significant especially at the Adobe Creek Estates site. Photodegradable tree shelters such as Tubex should be installed for the coast live oak and valley oak plantings at all sites. The tree shelters will both reduce grazing pressure and increase soil moisture in the vicinity of the oak plantings. Tree shelters have been shown to increase the percent survival and height increment for oak plantings when implemented in concert with weed control (McCreary and Tecklin 1992). Tree shelters installed at the Adobe Creek Estates should be 4 feet in height to protect against deer and 2 feet in height at all other sites. Even though the probability of deer damage at sites other than Adobe Creek Estates is low, tree shelters should be used at all sites because they promote the rapid growth of oaks by modifying the microclimate (i.e. increased soil moisture, moderation of temperature fluctuations).

At the Adobe Creek Estates site, the other species of trees and shrubs most subject to browse (red willow, California rose, and common snowberry) will be caged with a foliage protector constructed with flexible plastic browse netting. The netting will be installed flush to the ground, approximately 4-feet high and at least 3-feet in diameter, and will be supported by 3 rebar posts. It will be installed immediately following planting. Wire mesh cages may also be used.

Jute mesh shade cloth should be installed for California bay and common snowberry at all sites. The shade cloth will be supported by 3 rebar posts with a ring of bailing wire fastened to the top of the posts. The posts and bailing wire will be installed so that the bailing wire ring is approximately 3 feet in diameter and 4 feet above the ground. Jute mesh shade cloth will be installed so that it covers the top of the bailing wire ring and hangs a minimum of 24" down the side of the protector. The shade cloth will be attached to the bailing wire ring and rebar posts with twine.

4.4.5 Erosion Control Seeding

Areas disturbed during site preparation may be seeded with a native seed mix, mulched with straw, or treated with erosion control blankets.

4.5 SCHEDULE

The project is scheduled to begin grading in spring of 1999. The mitigation sites will be graded in the spring and summer of 1999. Ideally, the plants will be installed between October 1999 and March 2000. Plant installation may occur earlier if project construction is accelerated. Plant installation in less than optimal times of year will be accompanied by an increased level of maintenance, especially irrigation.

4.6 MAINTENANCE PLAN

4.6.1 Schedule

The mitigation plantings will be maintained regularly during the 3-year plant establishment period. Maintenance activities will occur approximately 3 times per month during the growing season (March-October) and approximately once per month from November-February. The plant establishment period and associated site maintenance will be extended if significant plant replacement is required due to low plant survivorship.

4.6.2 Plant Replacement

Dead plants will be replaced if any of the plant survival performance or final success criteria are not achieved.

4.6.3 Irrigation

The riparian mitigation site plantings will require irrigation during the 3-year plant establishment period. The plants will be irrigated with a bubbler irrigation system. Irrigation emitters should all be fully adjustable to zero to support varying plant needs. Since the tree shelters are designed to conserve soil moisture, the coast live oak and valley oak will require less irrigation than other trees, such as California buckeye and Mexican elderberry, planted at similar elevations. In Year 1, the plants will be irrigated with enough regularity (approximately 2-4 times per month), from March through October, to keep the soils within the root zone moist. The irrigation schedule in Year 2 will be based on the water requirements of the plants and is anticipated to be substantially less (approximately 1-2 times per month). In Year 3, little irrigation (0-1 times per month) will be required.

4.6.4 Weed Control

Weeds within the riparian mitigation site will be controlled around each plant and throughout the site as a whole. The irrigation basin around each installed tree and shrub will be kept weed free by maintaining the wood chip mulch layer and removing the weeds which become established in the mulch. Weeds throughout the site will be kept to a maximum height of 1 foot year round and weed control activities will occur before seed set. Care will be taken to *avoid* any native woody species that colonize the gaps between plantings. Therefore, maintenance personnel will be trained to differentiate between native and non-native species.

4.6.5 Plant Protection

The riparian mitigation site's foliage protectors and treeshelters will be maintained in good working order until such time (1-2 growing seasons) that the plant's growth is restricted. The foliage protectors and supporting stakes will be removed and disposed of off-site when growth is confined by the protectors. The treeshelters should be removed and disposed of when they start to photodegrade (~ Year 5).

4.7 RESPONSIBLE PARTIES

Mitigation site maintenance will be funded by the Santa Clara County Water District. Scott Wilson and Vickie Germany are the contact persons for the District and can be reached at (408) 927-0710.

5.0 MONITORING PLAN

5.1 INTRODUCTION

The long-term goal of this riparian mitigation plan is to restore self-sustaining, native riparian plant communities at the channel modification sites and in large gaps in the riparian corridor within the project area. This plan seeks to improve the continuity of native vegetation along the riparian corridor within the project area, and to improve the value of riparian habitat at the restoration sites to wildlife species that utilize the oak dominated riparian habitat along Adobe Creek. The planting and maintenance plans are designed to facilitate the development of plant communities dominated by oaks with a relatively dense cover of native woody plants in the overstory, mid-level, and understory strata.

The following monitoring plan describes performance and success criteria and methods for measuring these criteria, to assess the degree to which the riparian mitigation goals are being met. The riparian mitigation sites will be monitored for a minimum of 10 years (growing seasons) after installation of the plantings. Monitoring will be conducted annually in Years 1-6, and once in Years 8 and 10. Monitoring results from Years 1 through 8 will be compared to the performance criteria to evaluate progress toward the goals and to provide a basis for remedial action recommendations. The results of the monitoring in Year 10 will be compared to the final success criteria to determine if these criteria have been met. If the final success criteria have not been met, remedial actions and monitoring will continue until they have been met.

5.2 FINAL SUCCESS CRITERIA

5.2.1 Introduction

The final success criteria will be used to determine if the project applicant has met his/her mitigation obligations. Attainment of the final success criteria will indicate that the mitigation is well on its way towards meeting the long-term habitat goals of the site with little chance of failure.

5.2.2 USACE Jurisdictional Areas

An assessment will be conducted at the channel modification sites starting 3 years after site construction to determine the post-project acreage of USACE jurisdictional area in the Adobe Creek channel at each channel modification site. The post project acreage of USACE jurisdiction at each site will be compared to the pre-project acreage (West Edith Avenue Channel Modification Site = 0.23 acres; Foothill College Channel Modification Site = 0.35 acres) to assure that there was no loss of USACE jurisdictional area.

5.2.3 Percent Cover

The percent cover final success criterion will be applied separately to each of the five riparian mitigation sites. Average percent cover is positively correlated with aboveground plant biomass and wildlife use and will be used as the primary indicator of successful establishment of riparian habitat. The final success criterion for average percent cover shall be met 10 years following plant installation. For areas interplanted with trees and shrubs, average percent cover shall be 50 % by native trees and 20% by native shrubs. If tree cover exceeds the final goal, the final success criteria for shrub cover may be reduced by a corresponding amount.

5.3 PERFORMANCE CRITERIA

This section contains the performance criteria and trend characteristics for the riparian mitigation sites. Monitoring of performance criteria and trend characteristics will evaluate the extent to which the mitigation areas are incrementally developing high-quality habitat. It can be assumed that project impacts are being gradually mitigated to a level of insignificance if all performance criteria are met and the trend characteristics show positive progress.

The performance criteria (percent survival, average percent cover, and site maintenance) are quantitative benchmarks against which revegetation progress will be tracked. These criteria will be applied separately to each of the five riparian mitigation sites. Trend characteristics (plant vigor/health, and natural reproduction/recruitment) are site characteristics to be monitored over time but these have no fixed criteria. Monitoring of the trend characteristics will provide valuable supplementary information concerning site development and will help guide maintenance activities and remedial action, if required.

5.3.1 Plant Survival

All trees and shrubs installed have an 80% survival (with a health and vigor rating equal to or greater than 2) performance criterion during the 3-year plant establishment period. All dead plants will be replaced if survival falls below the respective performance criteria. Survival results following the cessation of irrigation will indicate whether plant roots have developed sufficiently to support the plants under natural conditions. In Years 4 and 5, after the completion of plant establishment and the cessation of artificial irrigation, survival for each life form (tree/shrub) planted shall not be lower than 60%. All dead plants will be replaced if survival falls below 60 % during Year 4 or 5. The monitoring ecologist will recommend locally native species for plant replacement that are appropriate for the conditions of the site at the time of replacement. If percent survival falls below 60%, replanting may cause the monitoring period to be extended beyond Year 10, if the final success criteria are not met by then.

5.3.2 Percent Cover

Average percent cover by native woody species is expected to be relatively low during the first three years following plant installation, but should increase quickly thereafter. Table 8 provides the performance criteria for percent cover.

Table 8. Riparian Mitigation Site Percent Cover Performance Criteria.

Monitoring Year	Average Percent Cover of Native Trees	Average Percent Cover of Native Shrubs
Year 2	2 %	1 %
Year 3	4 %	3 %
Year 4	8 %	5 %
Year 5	15 %	7 %
Year 6	25 %	10 %
Year 8	35 %	15 %

5.3.3 Site Maintenance

Site maintenance is included in the performance criteria because of the critical importance of proper maintenance during the plant establishment period. Site maintenance monitoring will assess plant replacement, weed control, irrigation system maintenance, and foliage protector maintenance. Site maintenance will be monitored during the three-year plant establishment period. The following are the performance criteria for site maintenance:

5.3.3.1 Plant Replacement. All dead plants will be replaced between 15 October and 15 March. The monitoring ecologist will recommend locally native species for plant replacement that are appropriate for the conditions of the site at the time of replacement. The plants must originate from Santa Clara or San Mateo County and preferably from the Adobe Creek watershed. The landscape contractor will submit a written summary of the origin of the propagules, replanting dates, location, species, and numbers planted per species to the monitoring biologists by May 31 of each monitoring year for inclusion in the yearly monitoring report.

5.3.3.2 Weed Control. The four-foot diameter planting basins will be kept weed-free for the majority of the year. The maximum height of all weeds within the planting basins will be 6 inches at any time. The maximum height for all weeds on the site, at any time, will be 12 inches and they will be controlled before seed set.

5.3.3.3 Irrigation. The plants will be irrigated often enough so that fewer than 25 % of all plants, at any time, show drought stress during the plant establishment period.

5.3.3.4 Foliage Protectors. The foliage protectors will be maintained so that 90% of them are functioning properly at any one time. They will be removed if the growth of the plants is restricted or etiolated (internodes lengthened and lacks chlorophyll). Tree shelters should be removed and discarded once they begin to photodegrade (~ Year 5).

5.3.4 Trend Characteristics

Trend characteristics to be monitored include seedling recruitment, plant health and vigor, and average tree height. The results of the trend characteristics monitoring will aid in the assessment of the site's progress. The methods for tracking trend characteristics are described in section 5.4 below.

Tree height is a useful measure of their vigor and value to the riparian habitat. Tree height and the rate of change in tree height is correlated with a number of ecosystem functions such as the rate of primary production, the volume of habitat available for consumers, the ability to provide shade, and the value to roosting and nesting raptors. Table 9 provides the tree height trend goals for each species in Year 5 and Year 10.

Table 9. Tree Height Trend Goals.

Species	Year 5 Average Height (ft)	Year 10 Average Height (ft)
arroyo willow	6	12
box elder	5	10
California bay	5	10
California buckeye	5	10
coast live oak	5	12
Mexican elderberry	6	12
red willow	6	12
valley oak	5	12

5.4 MONITORING METHODS

5.4.1 Monitoring Schedule

Monitoring will be conducted between June and October of each monitoring year. Monitoring reports will be prepared following data collection and will be submitted to the permitting agencies by the end of February following each monitoring year.

5.4.2 As-Built Plans

Within 8 weeks of the completion of mitigation site construction, the monitoring biologist will prepare marked-up "time zero" landscaping plans. These plans will show all significant deviations from the planting plans including the number of plants installed, species installed, deviations from plant installation locations, unplanted areas, changes to channel modification construction, and any features added to the site that were not included in the landscape plans. Future analysis of the site will be based on these plans.

5.4.3 Plant Survival

The survivorship of plantings will be determined by field counts of all trees and shrubs planted at the riparian mitigation areas. Percent survival will be calculated for each species planted as the ratio of the number surviving with a vigor rating equal to or greater than 2 to the number planted. No data will be recorded for vigor assessments used to determine if the threshold (2) has been met. Plant survival will be conducted annually over a 5-year period or until such time that plant establishment via natural recruitment makes survivorship too difficult to accurately assess. At that time, percent cover measurements will become the primary indicator of plant establishment rates. Survival counts under those conditions will be stopped.

5.4.4 Percent Cover

The sampling and analysis of the percent cover variable is designed to estimate the average percent cover of trees and shrubs at each mitigation site. Percent cover will be measured using the line intercept method (Bonham 1989). Percent cover sampling will begin when plant survival counts are no longer feasible due to plant growth or recruitment, but will begin no later than Year-4. If percent survival counts are feasible in Year 5, percent cover will not be measured in Year 5. Percent cover measurements will be conducted in Years 6, 8, and 10.

Transects will be oriented parallel or perpendicular to the creek channel. The length of the transects will be determined in the field. The location of transects will be selected using a stratified random method to assure an even sampling intensity throughout the site. The linear distance along the transect intercepted by plant leaves and branches will be recorded for each woody species. Data will be recorded up to the nearest half foot. The percent cover of tree and shrub species will be recorded separately to facilitate the separate calculation of average total percent cover for native tree overstory and for the native shrub understory.

Assuming a transect width of 1 foot, a minimum of 1% of the surface area of each mitigation site will be sampled. To determine the number, if any, of additional transects necessary to adequately sample each site, a graph will be constructed of the cumulative average total percent cover for native trees versus the number of transects sampled. The number of transects used will be the point where additional transects do not substantially change the average total percent cover for native trees.

5.4.5 Tree Height

The average height of each tree species installed will be measured as a trend characteristic in Years 5 and 10. Tree height will be measured using a telescoping measuring pole and/or clinometer. A minimum of five percent or five individuals (whichever is greater) of each tree species installed at each site will be sampled. Individuals to be monitored will be randomly selected. Each plant selected for height monitoring will be tagged and the location mapped on the planting plan to aid in locating the plant in Year 10. Results will be reported by species.

5.4.6 Site Maintenance

Site maintenance will be assessed during plant survival counts and during general site monitoring. The landscape contractor will be contacted to find out what maintenance measures have occurred during the monitoring year.

5.4.7 Natural Reproduction/Recruitment

Natural recruitment of seedlings of woody plant species will be monitored in a five-foot wide band along each transect. Native and non-native woody plants that become established will be counted and reported by species.

5.4.8 Plant Health and Vigor

A quantitative assessment of plant vigor and health will be made once per year for each woody species planted. A minimum of five percent or 5 individuals (whichever is greater) of each species installed at each site will be sampled. Individuals sampled will be selected at random. Selected individuals will be evaluated and given numerical ratings. These ratings will be compiled by species to provide an overall species health and vigor rating. Data will be used to determine temporal trends in vigor for each species at each site, to help determine the cause of poor survival and growth of certain species, and to assist with development of remedial action recommendations. Once monitoring has transitioned from survival counts to cover sampling, vigor assessments will be done only in monitoring years preceded by 2 sampling periods in which no increase in cover has occurred.

The foliage, wood, and rootcrown, will be given a separate vigor rating for each individual sampled. Factors such as color, bud development, new growth, herbivory, drought stress, fungal/insect infestation, and physical damage will be taken into consideration when rating the foliage, wood, and rootcrown. Non-lethal ailments typically associated seasonally with certain species (e.g. summer mildew on box elder, spring anthracnose on sycamore) shall not be cause for down-grading. Vigor ratings will be assigned on a scale of 0 to 4 (Table 10).

Table 10. Health and Vigor Rating Scale.

Health and Vigor Numerical Rating	General Condition	Specific Criteria
0	Dead	
1	Poor	> 75 % of plant affected by cumulative symptoms
2	Fair	25 - 75 % of plant affected by cumulative symptoms
3	Good	< 25 % of plant affected by cumulative symptoms
4	Excellent	< 5 % of plant affected by cumulative symptoms

An overall rating for each plant sampled will be calculated by averaging the ratings for foliage, wood, and rootcrown.

For example: Plant Sample # 133
Foliage Rating = 2; Wood Rating = 3; Rootcrown Rating = 2
Overall Rating = (2+3+2)/3 = 2.33

5.4.9 Photo-documentation

Photo-documentation of the site will be conducted from a number of fixed locations. Photographs also will be taken to record any events that may have a significant effect on the success of revegetation, such as flood, fire, or vandalism. The locations for photo-documentation will be selected when the as-built plans are developed for each site.

5.5 DATA ANALYSIS

The yearly monitoring results will be compared with results from previous years to evaluate site progress. The data will be analyzed using a standard spreadsheet, data base, and statistical package.

5.5.1 Plant Survival

The survival rate among all species and survival rate per species will be compared to survival rates in previous years and to the performance criteria. Survival rates will be based on the original number of plants installed.

5.5.2 Percent Cover

The percent cover for a particular species along a given transect is the ratio of the linear distance of coverage for that species to the total length of the transect. Each transect will be the replicate sampling unit. The average percent cover of each tree and shrub species encountered, and the total average cover for all trees and all shrubs will be reported for each site. The average total percent cover for trees and shrubs will be compared to values determined in previous years, as well as to average percent cover performance and success criteria. If within year variation is high, statistical comparisons such as Analysis of Variance (ANOVA) could be performed to help determine if significant differences are present in average percent cover between years.

5.5.3 Tree Height

The average height of individual tree species will be compared to the average height determined in previous years as well as to average height trend goals. The average, range, and variance of each species' height each year will be reported. If within year variation is high, statistical comparisons such as Analysis of Variance (ANOVA) could be performed to help determine if significant differences are present in average tree height between years.

5.5.4 Natural Recruitment and Reproduction

Utilizing each transect as a sampling unit, the average density of each woody species colonizing via natural recruitment will be determined. The average density will be compared with previous year's results.

5.5.5 Plant Health and Vigor

Plant vigor and health will be reported as the average health and vigor of each species. Health and vigor ratings will be evaluated over time.

5.6 SCHEDULE

Vegetation monitoring will be conducted between June and October of each monitoring year. The USACE jurisdictional area determinations will be conducted in the spring to take advantage of the best opportunities to examine the site's soils and hydrology.

5.7 CONTINGENCIES AND REMEDIAL ACTIONS

Analysis of the cause of site failures will be made and remedial actions will be recommended to correct the problem if a performance criterion or a final success criterion is not met. Alternative mitigation sites have not been considered at the present time since the sites appear to be fully suitable for restoration. Alternative mitigation site planning will begin if it becomes apparent that the final success criteria for the sites will not be achieved in a timely fashion.

5.8 REPORTING

Annual monitoring reports will be sent to the USACE, CDFG, and Regional Water Quality Control Board by the end of February following each monitoring year. Annual monitoring reports will include a brief description of the project, the methods used to collect and analyze the data, the results of the data analysis, a discussion of the results, and conclusions regarding the present condition of the site. The report will also include a remedial actions section, which will discuss any additional actions required. Representative photographs will be included.

5.9 COMPLETION OF MITIGATION

When the final success criteria have been met, the final monitoring report will document that all monitoring responsibilities have been met. This report will be submitted to the permitting agencies.

5.10 STATEMENT OF FINANCIAL COMMITMENT

The Santa Clara Valley Water District is committed financially to the successful mitigation of impacts to riparian habitat from implementation of the Adobe Creek Watershed Plan (District 1996) including long-term monitoring and any required remedial actions.

6.0 LITERATURE CITED

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APPENDIX I: SELECTED RESOURCE AGENCY LETTERS

TATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, *Governor*

DEPARTMENT OF FISH AND GAME
OST OFFICE BOX 47
OUNTVILLE, CALIFORNIA 94599
707) 944-5500

RECEIVED
AUG 27 1997
BY:

August 20, 1997

Ms. Vickie Germany
Santa Clara Valley Water District
6489 Camden Avenue
San Jose, California 95120

Dear Ms. Germany:

Adobe Creek Watershed Planning Study -
Riparian Impacts Analysis, Santa Clara County

Department of Fish and Game personnel reviewed the July 3, 1997 submission from H. T. Harvey & Associates regarding the riparian acreage impacts of the above mentioned project. As indicated during the interagency field trip (January 26, 1995) and in Department correspondence (dated March 20, 1995 and December 10, 1996) the Department recommends riparian mitigation at a 3:1 ratio. Furthermore, the Department advised that, if significant monotypic stands of non-native vegetation could be documented, the Department would consider negotiating lower ratios.

The Department accepts the proposed mitigation ratios outlined in the Draft Environmental Report on page 83 and defined in the same document on page 70. (They are also stated in a March 27, 1995 transmittal memorandum to Carl Wilcox.) These ratios translate into an overall ratio of approximately 2:1 for the project. However, the acreage measurements presented in the July 3, 1995 letter indicate there are significant monotypic stands of non-native vegetation (0.31 acre). In addition, the acreage measurements indicate that non-native ground cover/bare soil areas represent 0.53 acre of the project impacts and are being included in the riparian mitigation; these areas are generally not considered in riparian mitigation ratios by the Department. Overall, the figures presented indicate that, with the proposed mitigation ratios for the project, the net riparian replacement will have similar acreage totals as if only riparian vegetation were mitigated for on a 3:1 ratio.

If you have any questions, please contact Margaret Roper, Fishery Biologist, at (408) 842-8917; or Carl Wilcox, Environmental Services Supervisor, at (707) 944-5525.

Sincerely,

Brian Hunter

Brian Hunter
Regional Manager
Region 3

cc: See next page

cc: Mr. Dan Stephens
H. T. Harvey & Associates
Post Office Box 1180
Alviso, California 95002